The Naturalist (Kansas City, Mo.)

Vol. 4, no. 1 (Jan. 1889) - v. 4, no. 12 (Nov. 1890)

Tucker Gift

Continues: The Hoosier naturalist

Continued by: The Kansas City scientist

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The Naturalist.

VOL. IV. KANSAS CITY, MISSOURI, JANUARY, 1889. NO 1.

THE UNIVERSITY OF KANSAS.

Recent Notable Additions to it.

One of the most important events in the scientific annals of the university of Kan. has just transpired in the return of Professor L. L. Dyche, from Texas, bringing with him eleven complete Buffalo skins for the university cabinets. These skins have been carefully prepared for taxidermic purposes, and a choice selection from them will soon be mounted for exhibition at Snow Hall of Natural History, making with the magnificent Montana pair, already mounted, the finest group of Buffalo in the world. It is a great piece of good fortune that these last survivors of the Southern herd of Bison have been secured for Kansas, and the state is to be congratulated that Professor Dyche was able to successfully compete with agents of two of the largest museums in the United States, the National Museum at Washington, and the American Museum of Natural History, in New York city. Being on the ground in person, he was able to effect an advantageous purchase of the skins, and the university will now enjoy the fame and prestage of possessing another attraction beyond the reach of Eastern institutions. The skins not used for mounting, can be advantageously exchanged for the skins of other mammals, which it would be impossible to obtain in any other way.

The ranchman from whom these animals were obtained, has for several years been a constant observer of the Southern herd of Buffalo, and has regretfully watched their gradual disappearance. Last autumn only twenty-nine individuals were left of what was once an immense herd, numbering tens of thousands, and fairly blackening the plains of Western Kansas. Since October, twenty-five are known to have been killed, and the remaining four, all of them females, have probably also perished. The eleven specimens secured for the university were killed very near the Kansas line, and there is every reason to believe that they were born upon Kansas soil.

The above article is part of a letter from a Lawrence, Kan. correspondent to a Kansas City weekly.

The following is an extract from an article that appeared in the same paper a few days later:

A portion of "the only herd of Buffaloes in the world" arrived in Kansas City from St. Paul last night. These animals are a part of a herd of forty Buffaloes which the well known breeder "Buffalo Jones" of Garden City, has recently purchased in Manitoba.

Dr. W. F. Carver, the noted shot, conceiving the idea of exhibiting them here, built a strong corral on Walnut street, and accompanied by Will Jones, a brother of "Buffalo" and fourteen cow boys armed with huge clubs, undertook to drive the buffaloes from the cars to the corral up town. Well, they and 500 other fellows chased those brutes all over town, and when morning came had succeeded in getting all but three in the corral where they remained several weeks.

Mr. Jones has over one hundred Buffaloes on his ranch near Garden City.

With the exception of a few isolated specimens these are the only Buffaloes in the world and on this herd is placed the sole dependence of perpetuating the stock and recreating the race.

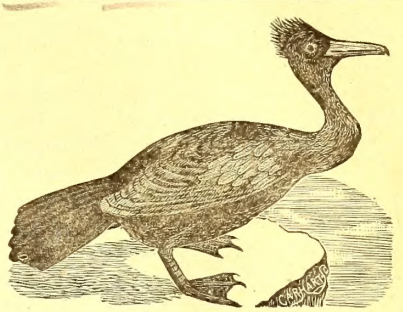
Vermont Notes.

On the seventh of last May, I was out collecting eggs, and passing under a stone bridge, caught sight of a Phœbe's nest. Climbing up I flushed a Song Sparrow, and found two Sparrow eggs and one Phœbe egg in the nest. I did not disturb the eggs. I saw a Phœbe sitting on the fence not far away. Some ten days later, passing by the bridge, I discovered the Sparrow dead on the ground and the Phœbe sitting on the nest. Climbing up, the Phoebe flew away. The nest contained two young Phœbes and two young Sparrows. I do not know whether the Phœbe killed the Sparrow or not.

On August 15, 1888, while digging out Bank Swallow's nests in an old gravel pit, I was surprised to see a Bluebird fly from a hole near by. On investigating I found six fresh Bluebird eggs. The entrance to the nest was fourteen inches deep, and the nest itself was composed of dry grass and a few sticks.

I never found the Bluebird nesting this way before. I would like to hear from collectors in other localities.

H. H. B., Castleton, Vt.



Cormorant.

119. Phalacrocorax carbo. (Linn.) [642.]

Hab. Atlantic coasts of Europe and America, south in winter on the coast of the United States, casually, to the Carolinas.

The Common Cormorant is very generally distributed throughout nearly the entire northern hemisphere. It breeds in the northern parts of Europe and Asia and in North America from the Bay of Funday to Greenland. The Cormorants are curious birds of strange figure; the outer surface of the plumage in most species normally is of a dark lustrous greenish-black, but subject to great changes, making their study very difficult. The eyes as a rule are green, a color rarely seen in birds. They feed principally upon fish and their voracity is proverbial. This species breeds in vast numbers on the rocky shores of Labrador and Newfoundland; making the nest upon the top of ledges or on projections and in crevices of precipitous rocks, which are covered with the excrement of the birds. It is composed of sticks, kelp and sea weed. Like all the Cormorants, this species is gregarious and breed in communities. They are all known under the common name of Shag.

Mr. Frazar met with a colony of this Cormorant in company with the Double-creasted species on the coast of Labrador. Many of the nests contained large young, June 19. Nests of the Double-crested Cormorant were placed wherever the ledges would hold them, while those of the common species were built close to the top. The nests of the Common Cormorant usually contained four or five eggs, and several sets were taken of six. The eggs average larger than those of the Double-crested; the sizes vary from 2.38 to 2.65 long by 1.29 to 1.60 broad. Color, pale greenish; form, elliptical.—*From Prof. Davie's Nests and Eggs of North American Birds, 3rd edition, by the author's kindness.*

34,560,000,000,000,000,000 to 1.

What a vast difference there is between the size of the animalculæ which only appears like a visable point, when magnified 500,000 times, and the whale, which is 100 feet long and 20 feet broad! The proportion between the two is 34,560 trillions to 1.—*Dr. Dick.*

WANTED to Exchange; Coues' "Birds of the North-west" for Coues' "Birds of the Colorado Valley."

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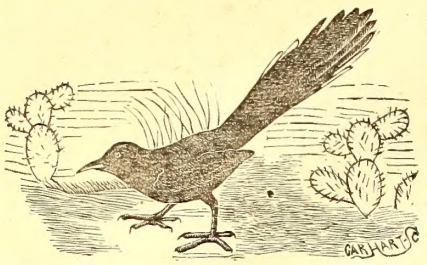

Geococcys californianus (LESS.).

Written for THE NATURALIST.

The subject of our sketch is familiarly known as Ground Cuckoo, Chaparral Cock, or Road-runner. He is the largest and most conspicuous if not the brightest colored representative of the order COCCYGES of which less than two dozen species are found in North America, and of these Ornithologists do not credit a dozen as being found and breeding within the limits of the United States.

The A. O. U. Code, and Prof. Coues listing nine each; Mr. Ridgway describing eleven in his recent work Rigdway's Manual of North American Birds. This order is now divided into three families for the United States: CUCULIDÆ. Cuckoos, Anis, etc; TROGONIDÆ. Trogons; ALCEDINIDÆ or Kingfishers. A fourth family, MOMOTIDÆ, the Motmots, is, according to Ridgway, peculiar to Mexico and the three species of this family are all gorgiously attired in blue and green and gold.

The family CUCULIDÆ has nine representatives in North America, eight of which inhabit the United States, though it is doubtful if one of these, *C. maynardi*, breeds with us.

This family is divided into three genera; Crotophaga, Geococcyx and Coccyzus. Geococcyx has but one representative in the States, *californianus*, and the other species, *G. affinis*, Mexican Road-runner, is found in Mexico. Our Road-runner does not reside within the borders of Missouri as he is described as inhabiting northern Mexico, western Indian Territory and Kansas, southern Colorado and California. In life, the naked skin before and behind the eye is brightly colored with blue, white and red or orange. He is conspicuously striped with soiled white and brown, the latter being glossed with green; lower parts whitish with a pale brownish tinge on on the chest and fore-neck; tail feathers, excepting the middle pair, broadly tipped with white, the outer webs being glossy blue black and the inner webs greenish. The bird is from twenty to twenty-four inches long, the wings about seven inches, and the tail usually a foot long.

The nest of this species, like the more familiar ones of his yellow and black-billed relatives, is rudely constructed of sticks, grasses, etc., in bushes or low trees. The eggs are more numerous however, there often being as many as twelve. They are ovate in form, white or buffy white in color, and average 1.54 x 1.20.

Californianus displays a great fondness for Rattlesnakes. Basking in the semi-tropic afternoon sun's fierce rays, they soon fall asleep and at such times are usually found by our long-tailed friend, the Road-runner, who immediately proceeds to surround one with a correll of cacti leaves. This done, he hops into the pen and, administering Mr. Rattler a vigorous peck, hops out again. The snake thus rudely disturbed from his siesta, awakes, furious at the interruption, and finding himself surrounded by the correll vigorously assalts it. Wounded by the prickers he becomes blind with rage and strikes again and again, until, covered with cacti leaves, he succumbs, a victim of his own folly.

The Road-runner probably gains this particular name from its fleetness of foot, often taxing the speed of a horse to its utmost to keep up with it, until, tired of the sport, he declares the race off, by turning suddenly to the right or left and concealing himself in the innumerable cacti thickets that abound on either side of the road.

J. C. W., Mexico, Mo.

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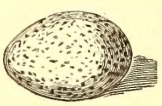

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497	Yellow-headed Blackbird,	03
506	Orchard Oriole,	03
488	Common Crow,	03
402	Yellow-billed Cuckoo,	06
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352	Bald Eagle,	1 58
310	Wild Turkey,	32

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ANYONE who is now, or may become a subscriber to this paper before May 1st. can secure an egg each of the Rook, Jackdaw, Moorhen and Mistletoe Thrush, by sending ten (10) cents to pay postage and packing.

KANSAS CITY and Pueblo are blessed with only a few straggling and ragged English Sparrows. Indianapolis could well spare some of her innumerable Sparrow population for some of these quiet(?) western towns.

IF you will relinquish thirty (30) cents to our safe keeping, for value received we'll send you THE NATURALIST twelve (12) times. And if enough of you will do likewise, we'll expand and give you of lore Ornithological, Oological and Entomological, all you can stand. What say you?

WE have been compelled to drop part of our name, i. e., "Hoosier". No doubt some of our subscribers, disapointed at the long delay caused by moving to this city and, later, the Editor's absence in Colorado, will think that we could make appropriate use of Missouri's nick name as a substitute for Hoosier. But, while "Puke" would be a suitable sobriquet for a certain Kalamazoo "Kemikal Kompound" vender, we can't bring ourselves to consider it at all appropriate for this paper. Suggestions are in order.

IN the Senate, recently, Mr. Morrill offered an amendment to the sundry civil bill authorizing a statue to Prof. Spencer F. Baird, late of the Smithsonean Institute, to be erected in Washington at a cost of $15,000. This is a step in the right direction and we hope nothing will come up to prevent its speedy completion. The sum however, should be larger.

PROF. PASTEUR is meeting with well earned success, as he can now be found in a magnificent building in Paris, recently built by public subscriprion. Those believing that "an ounce of preventative is better than a pound of cure" should address the proffessor and secure a bottle of his anti-hydrophobia germs and inoculate himself. The dog is certainly destined to go.

NAME YOUR INSECTS by using Eberhart's Key. 25 cts. EBERHART & SON, CHICAGO LAWN, ILL.

WE announced in the last issue of this paper, for appearance in the near future, "The Ornithologists, and Oologists' Semi-annual". It gives us pleasure, at this writing, to state that a copy has been received. It is all and more than its publisher claimed it would be—filled with excellent reading matter of especial interest to Ornithologists and Oologists, tastily and appropriately illustrated, and typeographically, the most fussy critique would pronounce it O. K. The price is 25 cents for the plain edition and 35 cents for a fine edition printed on heavy paper with antique covers. It is not to late yet to order a copy. Mr. Foot's address is 43 Fenn St., Pittsfield, Mass.

OUR friends are cordially invited to call when in the city. You will be interested in our collections at least. You will have no difficulty in finding us at the Humboldt Block, 601 Main Street, The entrance is on Sixth Street and we're on the second floor.

WHO says Crows shun civilization? They may be seen flying over this city almost any hour during the day.

GROUNDHOG day came with a vigerous and persistant sun. As Mr. Woodchuck could see his shadow from early morn till the sun sank beyond the rockies, he has undoubtedly pulled in for a long sleep and those disgruntled mortals who have been predicting an ice famine may see something of Jack Frost yet.

Clippings.

It is said that in Florida, where they manufacture ice with a machine, freezing takes place so gently that a spray of roses may be put into a tank of water and frozen into the mass of ice without stirring a petal from its place. There it lies imbedded in all its beauty of form and color.

At Indianapolis, Ind., almost any day, during warm weather, you can see great cakes of crystal ice in the windows of the meat shops, in the center of which is an immense fish. The ice of course is manufactured and the fish was placed in the water before the process began. It makes a beautiful and effective sign. [Ed.

Oliver Davie, dealer in second-hand books, etc., Columbus, Ohio, has been succeeded by Oliver Davie & Co.—*American Stationer.*

This will undoubtedly give Prof. Davie more time to devote to his forthcoming "Key", which is being waited for very impatiently by a large number of interested oologists. [Ed.

We are sole agents in the U. S. for Eward Hooper's artificial glass eyes. It will pay dealers as well as consumers to investigate our prices. Particulars on application.—Trouslot & Co.

Be sure and read Cupples and Hurds' announcement regarding Maynards' new work on the "Eggs of the Birds of the United States", under Literary Notes in the next column.

Books Received.

All books reviewed in these columns are for sale by the publishers of the N. We will mail the N. free to all purchasing through us when price of book or books are equal or exceed subscription price of this paper.

Birds of Carroll County, Indiana, by Barton W. Evermann. Extracts from The Auk, October, 1888, and January, 1889.

The list enumerates 203 species, and includes several, we should judge, rarely seen in Indiana.

L. S. FOSTER, Stationer, N. Y. City, publisher of THE AUK, has our thanks for two very tasty calendars for 1889.

LITERARY NOTE.

A new edition of Maynard's "Naturalist's Guide" will be issued immediately by Cupples & Hurd, Boston; also an entirely new work, by the same author, upon the Eggs of the Birds of the United States, with illustrations in color, done by the author.

The latter work will appear in eight fifty-cent parts, at monthly intervals. Subscriptions are asked for, by the author, from those interested.

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THE "KEY" IS STILL IN PRESS. All persons having already ordered same through us can select a fifty (50) cent specimen which we wil mail free, upon receipt of ten (1) cents to prepay postage and packing. This paper will also be mailed during 1889. These offers also hold good to all who may order before March 15, sending one (1) dollar with the order.

R. B. Trouslot & Co.,

New York Notes.

Written for THE NATURALIST.

It was an early May morning of 1888 that found me in the woods prepared for collecting. While listening to the various notes of the birds, I noticed a hole in a dead Poplar tree, some fifteen feet from the ground.

On investigating, I found that it contained seven fresh eggs of the Yellow-shafted Flicker, often called High-hole, and Golden Woodpecker. The nest was placed about nine inches from the opening, and was composed of small bits of wood and feathers. The eggs were pinkish white and almost transparent.

My second find was a Crow's nest which was in a small Hemlock, and contained three eggs of a light green color, spotted with brown, dark green and black. The nest was composed of small sticks and grape-vines, and was lined with grass.

I found several occupied nests of the Robin and Bluebird, but did not disturb them as I already had several sets of each.

It was about dinner time when I started home, and when just at the edge of the woods, up flew a Woodcock, and after looking about fifteen minutes I found its nest. It was placed on the ground under a small bush and contained three eggs of a buff color, marked with dots and blotches of brown. The nest was made of leaves and grass, and placed in a slight hollow in the ground.

I reached home in time for dinner, well pleased with the forenoon's hunt.

C. F., Princetown, N. Y.

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Davie's Egg Check List.

Why the delay?

It was Mr. Davie's intention, when he announced the Key for appearance, several months ago, to simply revise the second edition, but unexpectedly, a vast amount of data and entirely new material came to his services and caused him to change his plans materially. The new book will now have four hundred or more pages, while the price will not be changed. So, brother Oologists, you will receive for your dollar, double the amount of material that was originally calculated, and now, knowing all the circumstances you surely won't blame Mr. Davie, or us either, for the delay.

The book will also be bound in cloth, which will cost $1.65 post-paid. To compensate for the delay we make a special offer, at the botnom of our ad. for this work on another page, *q. v.* Those ordering a cloth bound book, before March 15th, will receive a 75c. specimen (at regular prices) free.

At this writing, the book is "printed as for as the Black-birds in the A. O. U. code," and will probably be ready for delivery about May 1st.

R. B. TROUSLOT.

Attention Publishers!

As We have come to Kansas City to stay, we would be pleased to have all future exchanges sent to this city.

Since leaving Valparaiso, postage on second-class matter, forwarded from that office, has cost us close to eight (8) dollars, and we earnestly request publishers and editors to change our address at once. Respectfully,

THE NATURALIST, Kansas City, Mo.
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The Resurection Plant.

This singular plant is found clinging to the barren rocks of the Santa Rosa Mountains of Old Mexico. When its branches are folded, it is about the size and shape of a lemon, and might easily be taken for a bunch of dry sea-weed. Put it in a damp place and the dead looking branches revive, spread themselves and become green.

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ORNITHOLOGISCHER
LESE-CIRKEL

The Naturalist.

VOL. IV. KANSAS CITY, MISSOURI, FEBRUARY, 1889. NO 2.

"Not a Tree,

A plant, a leaf, a blossom, but contains
A folio volume. We may read, and read,
And read again, and still find something new.
Something to please, and something to instruct."

The Shore Lark.

To the bird lovers on our bleak prairies, the advent of the Shore Lark is ever welcome. Close upon the flocks of Snow Buntings, retreating with the reluctant forces of winter, comes this harbinger of spring; and long before the sun has pierced the blanket of snow that enwraps the landscape, it is seen in little flocks, patiently waiting to possess its promised land.

Although not decked with tropical colors, still its combination of delicate brown, black and white, with its crescented throat, uniquely horned head and graceful step it is a thing of beauty; and as the flock sweeps in graceful, though erratic flight over the prairie or plowed field, there is in their curious metallic notes a sound singularly suggestive of the resumption of the farmer's toil, reminding one of the clinking of chains and creaking of axles, as he drives his team afield.

As might be inferred from the foregoing, the Lark is an early breeder and even before the snow has all disappeared its nest is sometimes completed. It is not an ambitious architect, and even prefers the smooth sward of the prairie to the shelter of a tussock or bush, and for that reason the nest is very hard to find.

Two only have fallen under my inspection, and of these I will write briefly.

Late in April, 1885, while at work, I noticed a male Lark busily foraging on a spot of ground about 50 ft. square, from which the sod had been removed, pausing occasionally to indulge in a brief song. Surmising that near at hand his mate was at her maternal task, when the noon hour arrived I took my lunch and reclined on the grass, near at hand, hoping, while I was dining, he would betray his secret, but he was very discreet. Although he did not gratify my hopes, he still afforded much amusement. Notwithstanding he was so very small, no Turkey-cock could surpass our little gallant, as he strutted along with bristling feathers and trailing wings and tail; not however at any time oblivious to any delicate morsel that might come within reach.

But life is not all sunshine even to a bird, and this one had its *bete noir* in the person of a Striped Gopher, whose burrow was close at hand, and many were the skirmishes between them, till at last, the animal having ventured too far from home, a pitch battle ensued and Sir Gopher beat a hasty retreat, the Lark snapping at, and seizing hold of the Gopher's tail, until he reached his burrow. Doubtless the knowledge of a weakness on the part of the Gopher for eggs or young birds as and article of diet was the *casus belli* in this instance.

Concluding that if any nest was found I must find it myself, I commenced my search, and soon startled the female from her retreat, disclosing a set of fresh eggs. The nest was on a slightly sloping bank, deep, cup shaped, and with thick walls of mud and grass, which were continued a little distance above the ground so that all water would be turned away. The bird was very undemonstrative, and when the eggs were secured, and I turned to leave, she returned to the nest and began to scratch up the bottom in search of her treasures.

Nest number two was discovered by accident early in April, 1887. While driving across a level grass meadow, near a little pool of water, the bird darted off as the wheel passed within six inches of the nest, which, this time, was merely a scanty lining of dried grass in a hole scratched in the ground, thus being a strong contrast to the other. Three fresh eggs made up this set.

Visiting the place a week later the male was seen constantly in the vicinity, uttering his spasmodic song from the top of a certain post in a vineyard near at hand, which was his continual resort; but the old nest was deserted, and no amount of searching could discover the new one, for, perhaps grown wise by experience, the bird would not leave her eggs.

One other set in my cabinet from the vicinity of Winnipeg completes my suite of specimens of this species. Dark grey, thickly covered with darker spots, and averaging .83 by .61, they seem to possess an individuality easily recognized by the practiced eye.

FRANK H. NUTTER.

The rabbit pest is again making headway in Australia. The means taken to eradicate it proved insufficient.

Why not subscribe for THE NATURALIST? Send us thirty (30) cents at once.

Cynocitta cristata.

This member of the CORVIDÆ family familiary known as the Blue Jay, and sometimes owing to his carniverous habits known as the meat eater, richly merits the dislike entertained of him by Ornithologists. In addition to his known and often observed habit of robbing the nests of other birds, a new and hitherto unpublished charge must be laid at his door. A chicken fancier, noticed occasional loss of the newly-hatched chicks and being of a rare kind of Bantam, instituted a watch, resulting in the detection of the offender, which was no more or less than the Jay — who, perched on the limb of a tree, watching with the patience of a terrier, the moment the mother hen allowed a chick to stray, pounced upon it, and carried it away to devour at his leasure.

Clippings.

A Nebraska man has settled the question of how prairie dogs obtain water. He claims they dig their own wells, each village having one with a concealed opening. He knows of such a well 200 feet deep, having a circular staircase leading down to the water.—*Plain Talk.*

DR. KRUSE, a chemist of Munich, has succeeded in decomposing cobalt and nickel, both of which have hitherto been supposed to be elementary substances. —*Ex.*

The Paris Academy of Science is just now excited over a plant called Colocasia. This plant often exhibits a trembling or a vibrating motion without any apparent cause, and as many as 100 or 120 vibrations have been observed in a single minute.—*Ex.*

EXCHANGES.

Wanted to exchange; Cones' "Birds of the North-west" for Coues' "Birds of the Colorado Valley." Wm. Stephenson, Ft. Verdi, A. T.

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We have in stock a supply of the following enumerated FOSSIL FISH from the GREEN river shales; DIPLOMISTUS ANALIS, D. HUMILIUS, D. ALTUS, D. PUSILLUS, on slabs from 4 to 6 inches in length. For terms, address NATURALISTS' EXCHANGE, box 69, KANSAS CITY, Mo.

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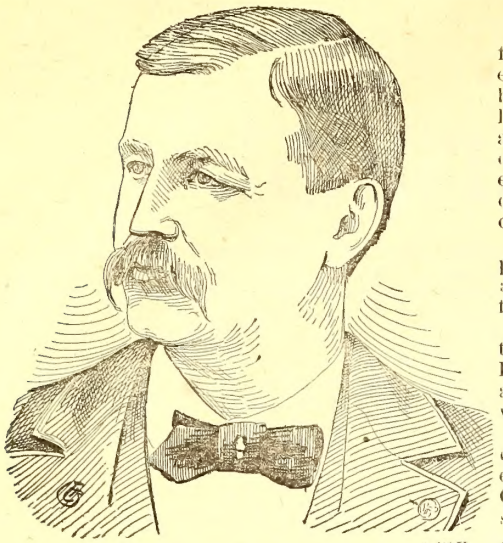

Professor Edwin Walters.

It affords us much pleasure to present to our readers the likeness and a sketch of one of Missouri's rising men. Edwin Walters was born in Scotland County, Mo., 40 years ago; his father, Dr. J. W. Walters, of Shelby Co., Ky., emigrated to Missouri at an early day, and married Miss Rhoda A. Hickman, of Howard Co., Mo., third daughter of Edwin T. Hickman, one of the early settlers.

Dr. Walters with his family moved to the frontier of Kansas about a generation ago; the Border war was in progress at this time, and the subject of this sketch passed through many stirring scenes and incidents. The family returned to Missouri in 1860.

Prof. Walters taught school in Southern Iowa immediately after the civil war, and then began a systematic course of scientific reading, supplemented by personal field work as a surveyor, the fruits of which are shown in many treatises and papers. For fourteen years he was engaged in surveying in different parts of the West, gathering a fund of useful knowledge, both economic and scientific.

Some months ago, Prof. Walters accepted the position of scientific editor of the Kansas City Journal, which position he now holds. Nature built Prof. Walters upon a generous mould, and endowed him with brilliant qualities of head and heart. A well balanced, shapely head, placed upon a well knit, muscular frame, every motion denoting self poise and strength, yet with that genuine modesty which always denotes true worth, carefully weighing all evidence presented and slow to condemn; possessing that quality of mind so requisite in the searcher after truth—freedom from bias.

Of Prof. Walters' scientific work, the readers of the Kansas City Journal entertain a very high opinion, as many calls from different sections, to lecture on Geology and the allied sciences attest. We regret that our limited space prevents a more extended account of Prof. W's scientific work; we however cannot refrain from alluding to the map defining the Natural Gas Belt surrounding Kansas City, the surveys and elevations being his work. At first it was received with incredulity, only to be repeatedly shown correct in every instance and now accepted as authority.

A Day's Collecting in N. H.

On the 30th of May, 1888, a fellow collector and myself started out for a day in the fields. It having been arranged previously, we got an early start, and at about 9 o'clock arrived at the bank of a river, where we enjoyed rather a cool bath. While bathing, we discovered a Kingfisher's nest, and on digging it out found but one egg.

Leaving the river, we entered a pasture where the grass was low and thick. A Spotted Sandpiper flew up from almost under our feet.

After a little searching, we found the nest. It was only a slight hollow in the ground lined with grass, and contained 4 very pretty eggs, which proved to be perfectly fresh.

After these eggs were blown and carefully packed away in our boxes, we entered the woods to look for Crow's nests. At first we were unsuccessful, but after awhile my companion shouted that he had found a nest, and could see the old Crow. We rushed up to the tree and the bird flew off, when it proved to be, not a Crow, but a Cooper's Hawk. The nest was placed in the fork of a large Chestnut tree, about 35 feet up.

After a hard climb, I was rewarded with a fine set of two eggs. They were easily blown, although incubation was advanced. The nest was made of coarse twigs, lined with a few feathers. While we were blowing the eggs, the old bird flew around in the trees, uttering from time to time, a loud whistling noise.

After packing away the eggs we started for home where we arrived at about 3 in the afternoon, tired and hungry, but well satisfied with our day's journey.—E. L. K., Milford, N. H.

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We will mail the Oologist complete for 1888 to any one for 20 cts. in stamps. Address the editor of this paper at once.

New York Notes.

Written for The Naturalist.

One morning in April of last year, while visiting in the country, I set out with the hope of increasing my collection of birds' eggs. After about three hours of tramping, I found myself in a dark woods, perhaps two miles from any house. It was my desire to obtain some Hawk's eggs, as I had but one imperfect specimen. With face turned skyward, I searched the forest for many hours, now and then experiencing a thrill of joy at sight of a bulky mass of twigs in the top-most branches of some lofty pine. Many times did I have my hopes dashed to the ground by the discovery of a last year's Crow's nest after a hard climb of 50 feet or more.

I had concluded that it was too early in the season for any kind of birds to lay, although I had heard of Hawk's eggs being found in March, and turned to retrace my steps. Presently, I spied another nest, similiar to others I had seen. I hesitated before climbing to it, but as it was only about 30 feet from the ground, and the tree being easy to climb, I "shinned" up. The nest contained one large, clay-colored egg. My joy was so great at this welcome sight that for a moment I forgot where I was, and nearly fell from the tree. I contained myself, however, and examined the nest as was my wont. The foundation was constructed of branches of the hard pine and hemlock, some of which were three-fourths of inch in thickness. On these were laid smaller branches, and the whole was lined with coarse pieces of bark, evidently torn from the hard pine tree by the parent birds. The nest was only slightly hollowed, and insecurely lodged. A slight push would have sufficed to have thrown it to the ground.

I returned with my trophy and resolved to come back next day, and perhaps get another. I returned the following day and found another egg; and still a third a day or two later. Although the eggs were warm in each instance, in no case did we see or hear the parent birds, they evidently having taken alarm at our first approach.

From what I could learn, I concluded that it was a Cooper's Hawk's nest, and as such, two of the eggs repose in my cabinet.—A. A. D., New York City.

Will collect local specimens of any kind in exchange for eggs, in sets, with data; also exchange eggs. F. H. Nutter. Room 14, Richards Block, Minneapolis, Minn.

THE SPECIAL FEATURES

of THE YOUTH'S COMPANION for the coming year, as announced in the Colored Souvenir we have received, include six Serial Stories, and One Hundred and Fifty Short Stories fully illustrated. Also Tales of Adventure, Illustrated Sketches of Travel, Humorous Articles, Household Articles, One Thousand Anecdotes, timely Editorials on the leading questions of the day, and a whole page each week for the little ones. THE COMPANION has won a place in the home life obtained by no other paper, and is read every week in nearly a Half a Million families. With its double Holiday Numbers at Thanksgiving, Christmas, New Year's and Easter, its weekly Illustrated Supplements, its fine paper and beautiful pictures, no other weekly paper can approach it in value. It is really a $2.50 paper for only $1.75 a year.

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We are not yet on time, but are perceptibly gaining, and the April NATURALIST will appear about the middle of that month.

We are always glad to send sample copies of the NATURALIST to those who are not familiar with our paper, and will thank our readers to forward us lists of names of those likely to be interested.

THE fraud, R. M. Gibbs, of Kalamazoo, Mich., has sold out (so he says), to C. H. & E. A. Gibbs & Co. If the new firm(?) sends out the same snide preparation, and defraud publishers, they too will soon have to sell out.

EVERY person not already a subscriber, receiving a sample copy of THE NATURALIST will please consider it an appeal on his pocket book to the amount of thirty (30) cents. We won't put you to the expense of a postal note—use stamps and send them on at once.

COL. GOSS of Topeka, Kan., has recently returned from Mexico. He dropped in upon us the other day and gave us the pleasure of shaking his hand. The Col. is a highly interesting conversationalist and we trust he will call again whenever the opportunity offers.

OUR friend E. L. Brown, formerly of Durand, Wis., but now of Warren, Minn., has just returned from a two months' trip in the Rainy River country. He reports plenty of Taxidermal work, but thinks Snowy Owls scarce, having obtained only four all winter. He says: "Have had a number of Great Grey and Hawk Owls, and Great Horned Owls till you can't rest."

He expects to make a canoe trip down the Rainy River next summer.

WE quote the following from *Plain Talk's* Philateiy department conducted by Alvah Davison. We commend the item to the readers of THE NATURALIST:

"Does every reader of a paper always read the advertisements? This is a question I have often thought over, and I want to say right here that if you don't read them, you miss one-half of the good in a paper. To advertise costs money and plenty of it, and as much if not more time is spent on the advertising pages, than on the reading. An advertiser doesn't take space in a paper unless he knows he has something which the public wants and each reader is a part of the public, so they are inserted for your benefit, and if you will always look them over you will find much in them to interest you."

FROM a personal acquaintance with many of our younger readers, and being interested in their welfare, we can not refrain from publishing the following, from the *New York Medical World*, which we trust they will read and act upon at once:

"In an experimental observation on thirty-eight boys of all classes of society, and of average health, who had been useing tobacco for periods ranging from two months to two years, twenty-seven showed severe injury to the constitution and insufficient growth, thirty-two showed the existance of irregularity of the heart's action, disordered stomachs, coughs, and a craving for alcohol, thirteen had intermittancy of the pulse, and one had consumption. After they had abandoned the use of tobacco, within six months one-half were free from all their former symptoms, and the remainder had recovered by the end of the year."

The Exposition.

We have heard considerable about the Kansas City Exposition. Much to its credit and, also, from a scientific standpoint, much to its shame. This neighborhood is one of the richest fossil fields in the world. Many species are found here, as yet unknown to science and unidentified. Among our 200,000 inhabitants are numerous valuable and extensive collections, not only of fossils, but birds' eggs and other natural history objects. Local collectors have, from time to time, been induced to make displays at the Exposition. This they have done at considerable labor and expense, and when awarded suitable premiums, have felt satisfied, believing their work appreciated, even though the am't of the premium did not begin to cover their individual expense. Yet, when the managers positively refused to pay these well earned premimums, their feelings of satisfaction have turned to disgust, with the result that last year there was no Zoological, Botanical or Mineralogical display, and excepting the *Journal's* Economic, Sidney J. Smith's fossil, and T. J. Tidswell's Archæological specimens, there was nothing to interest naturalists or the hundreds and hundreds of other people similiarly interested

Now this is not as it should be. With a manager of ability, one possessed of liberal views, and favorably inclined towards the naturalist, Kansas City Exposition might, this fall, have a Natural History display of great credit to itself and this city — one that would attract scientists from all parts of the Union, and that would be a leading figure in bringing large crowds on the numerous excursion trains that could be run here from the surrounding towns and cities. We trust that the president of the board, Mr. James Goodin will see to it that no high salaried manager secures the appointment this year unless he can show his abilities from past results, and is an acknowledged friend of the naturalist.

Eagle Frozen Two Years.

A Golden Eagle, freshly killed, was placed in the cold storage of the Mechanical Refrigerating Company two years ago. We took it out a few days since and mounted it. It had remained frozen solid during the time; upon thawing, the feet and head were found to be somewhat dry, otherwise it appeared the same as if it had only been in a short time. —*O. & O.*, Boston.

Who ever heard a whale's *blubber*? Did you ever see a cow-*hide*? Have you ever seen a horse-*fly*?

Books Received.

All books reviewed in these columns are for sale by the publishers of the N. We will mail the N. free to all purchasing through us when price of book or books are equal or exceed subscription price of this paper.

HEAVEN REVISED. A narrative of personal experience after the change called Death, by Mrs. E. B. Duffey, Chicago: Religio-Philosophical Pub. House. 101 pages paper, price 25 cents. The author believes that she wrote "Heaven Revised" inspirationally. It is well written, but readers unacquainted with Mrs. Duffey would, we should think, be at a loss to decide as to the inspirationallity.

We have not the space to speak of this book as we would like and can only suggest that all, whether interested in Spiritualism or not, read for themselves.

Growing and shipping oysters is becoming a lively business at Pensacola, Fla.

It has been calculated that not less than 20,000,000 of meteors, each large enough to be visable as a "shooting star" enter our atmosphere daily.

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THE "KEY" IS STILL IN PRESS. All persons having already ordered same through us can select a fifty (50) cent specimen which we wil mail free, upon receipt of ten (10) cents to prepay postage and packing. This paper will also be mailed during 1889. These offers also hold good to all who may order before April 15, sending one (1) dollar with the order.

R. B. Trouslot & Co.

Eastern Maine Notes.

For The Naturalist.

On the morning of the 16th of last June, my brother, another young man and myself went on a collecting trip to Patten's Pond, a good sized pond about nine miles from here. After arriving, the first thing of consequence was the observance of a Yellow-bellied Woodpecker, the first we ever saw in this vicinity, and know of no local collector that ever saw one about here. In a marsh near the pond we found a Flicker's nest, and two Red and buff Shouldered Blackbird's nests. One of the Blackbird's nests contained three fresh eggs; the other, five full-fledged young birds. This fact, together with information derived from past experience, caused me to belive they hatch two broods in a season.

We next found a Spotted Sandpiper's nest, or hollow, containing four slightly incubated eggs; and on a small island, six Common Tern's eggs.

After eating our dinner, we passed on about two miles to another pond called Toddy Pond, where, at the first island on which we landed we found a Loon's nest, containing two handsome eggs, partially incubated. We were more than joyful over this unexpected find, a complete set of Loon's eggs being a rare thing among collectors here. After visiting a number of other islands but without success we returned home, more than satisfied with the trip.

I have a question I would like to ask: Did you, or any of the NATURALIST'S readers ever find an Am. Goldfinch's egg with a dark blue bar around the middle? I found a set of six eggs, an unusually large number, and one was encircled by a dark blue stripe nearly an eighth of an inch wide. J. A. S., Bucksport, Me.

A meeting of gentlemen interested in the advancement of science was held last night, in the rooms of Kansas City Art Association, in the Bayard building. Edwin Walters was elected temporary president and R. B. Trous ot was elected temporary secretary. E. T. Keim, David H. Todd and R. B. Trouslot were appointed a committee on constitution and by-laws. Great interest was manifested in the object of the meeting. The gentlemen who are leading in this movement are determined to make the society a successful one. Another meeting will be held, at the same place, next Saturday night.—*Kansas City Journal.*

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A work of extraordinary value.—Philadelphia Evening Bulletin.

The plates are admirable, giving the bills, claws, etc., of birds in life size.—Brooklyn Eagle.

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The AUK will present as heretofore, timely and interesting papers on the subjects to which it relates, and its readers may feel sure of being kept abreast of the advances in the science. The AUK is primarily intended as a communication between ornithologists. While necessarily to some degree technical, it contains a fair propotion of matter of a popular character. Its notices of recent literature cover the whole field of North American Ornithology, and with the departments of "General Notes" and "Notes and News" render the Journal indispensable to those wishing the latest and fullest intelligence of the subject. L. S. FOSTER, Publisher,

NEW YORK CITY. NEW YORK.

Attention Publishers!

As We have come to Kansas City to stay, we would be pleased to have all future exchanges sent to this city.

Since leaving Valparaiso, postage on second-class matter, forwarded from that office, has cost us close to eight (8) dollars, and we earnestly request publishers and editors to change our address at once. Respectfully,

THE NATURALIST, Kansas City, Mo.
Formerly THE HOOSIER NATURALIST, of Valparaiso, Ind.

The Naturalist.

VOL. IV. KANSAS CITY, KANSAS, OCTOBER 1889. NO. 8.

For The Naturalist.

Recent Discoveries of Fossils in K. C.

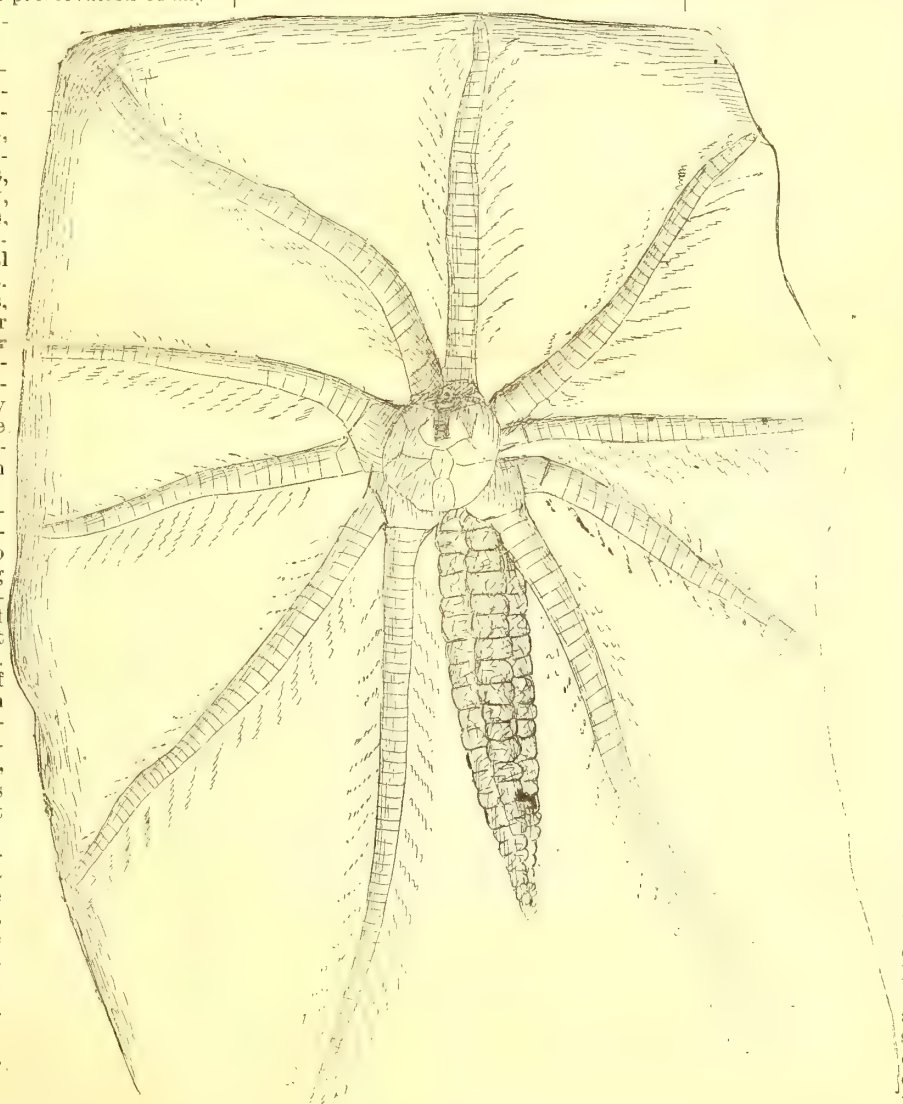
By David H. Todd.

One of the most important and interesting finds of fossils was made in Kansas City in the recent discovery of fossils in the excavation for the foundation for the new dry goods house of Bullene Moore & Emery. Many very fine fields have been opened up, and a large number of magnificent fossils found but none have seemed to so enthuse the Kansas City collectors as this last discovery. The fossils were mostly found in the blue Shale, in the most perfect state of preservation of any found in this locality.

Among the number were several species of Pleurotomaria, Productus, Schizodus, Bellerophon, Nautilus, Aviculopecten, Calamites, ferns, nuts, sponges, (fenestella,) and several species of Crinoids.

The Crinoids, some five or six (5 or 6) spieces in number are the most interesting and important, as these, to my knowledge, are the first perfect specimens ever found in this locality.

The general appearance of this Crinoid is such as to make a very striking effect in any collection. It was first found in a perfect condition by Mr. Sidney J. Hare, of this city. It has ten (10) arms or Tentacles, Basal, Proboscis, and Feelers.



This species is one of the most interesting found, with its arms radiating in every direction, giving it the appearance of a huge spider. The stem, or trunk, has a star shape with five points, or pentagenal.

The proboscis, or stomach, forms a very interesting part, as in specimens I have examined I find a number where the lower part of the proboscis seems to have been broken or lost and a new or second growth taken place. The proboscis in full grown specimens will vary in length from one and one-half (1½) to three(3)inches. While in some specimens the proboscis is slender, in others the center is full and well developed. I do not think this comes from any crushed condition, as the markings are to well defined. As to the naming of this Crinoid, we cannot as yet settle on anything definite.

We find, however, from Hayden's Survey of Nebraska, that Dr. Schumard, from fragments found, names it *Scaphiocrinus(?) hemisphericus*, but also adds the following: (see p. 148 & 149.)

"Until the vault of these Crinoids is known i will be difficult to determine whether they are more nearly allied to the Poteriocrinus or Cyathocrinus.

"From analogy, however, I am led to think *they will be found to possess the large, prolonged trunk or proboscis* of the Poteriocrinus group, instead of the merely vaulted summit and lateral tube of Cyathocrinus.

"When we compare the structure of this Crinoid, as far as yet known, with that of *Scaphiocrinus simplex* Hall, the type of that group, it will be seen to agree in all respects, aside from mere specific characters, such as its concave under side, slight difference of form etc., though it differs more widely from several of the other species that have been referred to that group, in having but a single anal piece, composing a part of the walls of the cup. Hence I have been led to place it provisionally in the Scaphiocrinus group, generally regarded as a sub-genus under Poteriocrinus."

Consequently the finding of this crinoid will at least settle the disputed point as to its classification.

Mr. Wm. Gurley, of Danville, Ill., on examination of this specimen, pronounced it to be "the wonder of coal measure crinoids." With his large collection of American and European Crinoids, he will be able to determine it definately. About thirty specimens of this crinoid were obtained and are in the collections of Mr. Sid. J. Hare, E. Butts, Chas. Dawson and myself.

Other specimens belonging to this same type were found. The Basil is the same in structure but some smaller, while the Tentacles are much heavier. On all the specimens of this type I have examined, *the proboscis is not found*, and only seven (7) or eight (8) Tentacles. A perfect *Eupachycrinus* was obtained, and is in the collection of Mr. E. Butts of this city; also a few fine specimens of *Zeacrinus*, however only one or two were obtained in a condition to be classed as typical specimens.

A very important item connected with the finding of these specimens is the absence of the Trilobite. I have not found anywhere in the Shale the slightest indication of of the *Philipsis major*.

The finding of plants and nuts indicates a very unsettled condition of the

water. The nuts are the first ever discovered in this locality to my knowledge. Mr. Hare found a wing of an insect which was sent to Mr. R. D. Lacoe, of Pittston, Pa., a specialist in Coal Measure insects. He was highly pleased and thought it might indicate a new species.

These fossils were all found on the cor. of Grand Ave. and Eleventh St., in layer No. Ninety Seven (97) of the last Geological Survey of Missouri, which is one hundred and sixty three (163) feet above the Kansas City Directrix, the fossils being located fifteen (15) feet below this horizon. The layer here has a dip of thirty (30) degrees to the South-West

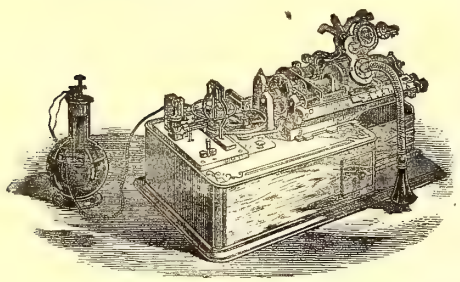
I am indebted to Mr. Butts for the Geographical position, and to Mr. Hare for the drawing of the accompanying cut.

Kansas City, Sept. 23, '89

The Eiffel Tower and Phonograph.

An extract from a Paris letter by A. Q. Keasby, a leader of the New Jersey Bar. published by permission of John L. Martin.

In the immense multitude of striking objects in the Paris Exposition there are two which excite the most universal and unflagging interest—the Eiffel Tower and the Phonograph. It may seem ab-



surd to compare two such dissimilar things, but in one respect they are alike, —in the attention they attract and the wonder they excite. One is the work of a French Engineer, and the other the product of American genius. Both produce their wonderful results by the manner in which metal is moulded to human uses by human skill. One appeals to the eye and the other to the ear

The Tower, formed almost entirely of thin strips of iron woven into a graceful fabric nearly one thousand feet high, dominates the whole scene, and forms the prominent landmark of Paris as you approach it from all sides. It attracts every eye and calls forth expressions of wonder from all tongues. Every day the four elevators are thronged by visitors eager to ascend. At the second stage where the last elevator is taken, you must usually wait an hour in a spiral queue, in order to form one of the squad of sixty to be carried to the top. And this is going on all day, and day after day, without intermission. It is the great success of the Exposition, both in a scientific and pecuniary point of view.

But down in the great Machinery Hall, which looks so small from the top of the tower, is the other object alluded to, which attracts scarcely less attention—the Phonograph.

It is made of metal also, but stands upon a small table, occupying, for each instrument, scarcely a foot of space.

There is nothing in its appearance to cause it to be singled out from the myriads of objects about it. There are eight of these little instruments on seperate tables in a portion of the space of 9,000 square feet occupied by Mr. Edison's exhibits. And around these tables it has been found necessary to construct long winding guards as at the elevator of the Eiffell, in order to regulate the access of the eager crowds.

To each of the instruments is attached a hearing tube divided into six branches, and an operator sits there ready to adjust them to the ears of the persons in the line as their turn comes. And there from morning till eleven o'clock at night the line is kept up almost without a break.

It is very interesting to sit within the rail and watch this line as it passes. It consists of all classes and all nations as chance has thrown them together. They wait patiently, gazing at the machine with varying expressions of curiosity. Then a squad of six takes hold of the tubes; they may consist of a lady, a workman, a typical American, a Turk in a turban, a dark skinned Egyptian in his robe and sash, and a little French girl. You can watch all these faces as they first catch the actual sounds of human speech coming from this little instrument and they form a curious study of facial expression. You can see how simiiarly the smile of wonder is formed

upon all human countenances. Few of the crowds that hear it have any clear notion of how the sounds are produced, but they hear human speech from a little machine of iron and wood and are lost in amazement. Most of them show signs of skepticism, and peer narrowly under the table for the man who is playing the trick.

This thing is going on all the time not only in Machinery Hall, but in a small room in Mr, Edison's part of the United States Exhibit, and in the room devoted to the Graphophone, which attracts the same interest. In this part there is not the same motley crowd and the exhibitions are given more deliberately and in several different languages. The Russian, the Italian, the German, the Frenchman and even the Arabian can hear his own language spoken by this marvelous instrument. It is not to be wondered at that it should hold the unfailing attention of the changing crowds of visitors, for to the most of them it is a perfectly novel thing.

It will not be a novelty long at the rate at which education in it is going on, Mr. Hammer, who has charge of the whole Edison Exhibit, gave me some interesting details of their work in making the operation of the instrument known. He said that often from 15,000 to 20,000 people have listened to it in one day, and that before the Exhibition closes the number of those who have heard it will run up into millions.

Thus the Paris Exhibition is adver ising the Phonograph and the Graphophone on a large scale for the benefit of those in America who are now engaged in putting the instrumeuts into practical, commercial use. Such education as is going on here—limited as it must be, is a necessary preliminary to the actual common use of the machines. Many persons, while admitting their great interest as curiosities, seem to doubt their practical utility, but after the intelligent and capable gentlemen who have charge of them in Paris have finished their work it will be easy to show the public, both in America and Europe, the vast advantages they off r in a business and social point of view. The traveller, to whom letter writing becomes such a bore, will soon learn to prize this invention, when he finds that at any hotel he can do as I did through the kindness of Mr. P. L. Walters, who has charge of the Graphophone in the Exhibition. He gave me a cylinder, at a quiet moment, and I talked a letter of about 1,000 words to a friend at home, heard it all repeated accurately, wrapped it in a piece of thin paper, placed it in a little wooden box with a sliding top held fast by a rubber band sunk in a little groove, put a five cent stamp upon it, and dropped it in the P. O. Box. Thus, with no labor whatever, I talked to my friend across the ocean at my leasure, and in a week or so hence he can simply take out the cylender, put it on his graphophone, and hear what I have had to say, which was about as much as is contained in this letter.

When the public comes to understand that this can be done for all sorts of commercial and social communications, at a cost little greater than that of our present writing apparatus, the object of Messrs. Edison and Taintor in their long labors upon the Phonograph and Phonograph-Giaphophone will be accomplished. Certainly the work of Messrs. Hammer and Waters and their efficient assistants at the Paris Exposition will do much to advance this object.

A. Q. KEASBY.

The Naturalist.

Published Monthly, at Thirty Cents a year, By Milton P. Davis. R. B. Trouslot Manager and Editor, 1808 N. 6th St. Kansas City, Kansas.

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GREETING.

THE NATURALIST appears again after an absence of seven months. The idleness was forced, principally from a press of business matters in other directions and not as some of our friends have been lead to believe, through want of funds or lack of interest.

THE NATURALIST, for the remainder of this Vol., will be published by Mr. Milton P. Davis, of this city. The business management, as of old, will be conducted by R. B. Trouslot, who, in connection with several enthusiastic scientific gentlemen, will have editorial charge.

Subscriptions will be received at thirty cents for this Vol., including the two issues already published, or twenty-five cents for the forthcoming numbers.

No premiums will be given.

Papers, notes and communications on all branches of Natural History are solicited. All contributions must be clearly written on one side only of the paper. Contributors of important articles will receive twelve copies of the NATURALIST containing same.

Exchanges will be inserted without charge; but they must be brief, to the point and written only on one side of paper, and not exceed four lines, including name and address.

All subscriptions, communications, exchanges, etc., should be sent to the editor of the NATURALIST, 1808 North 6th St., Kansas City, Kan.

THE ACADEMY OF SCIENCE, of which Prof. Edwin Walters is president, Dr. R. Wood Brown Vice-President, R. B. Trouslot Secretary and E. T. Keim Treasurer, is considering the advisability of incorporating.

Interesting papers are now being read before the members every two weeks on the Prehistoric Races of Jackson County, Missouri, by Messrs. Walters, Butts and Tidswell. They propose handling the subject in a systematic manner and when they are through will have given a very complete history.

Sidney Hare is also reading a series of papers listing and describing all fossils known to this vicinity. He is preparing with few exceptions, an excellent drawing of each species.

THE appointment of Arthur Winslow as State Geologist has recently been announced.

As Mr. Winslow hails from Arkansaw, we presume the commissioners were unable to find a competant person for the position, in this state, who would accept.

The assistants however, remain to be appointed, and we know of no one better qualified than Prof. Edwin Walters, favorably known as Scientific Editor of the *Journal*, and now Inspector of materials for Kansas City, Mo.

As Prof. Walters is President of the Academy of Science, the local Naturalists are especially desirous that he should be selected as one of Prof. Winslow's Staff, also from a political standpoint, this portion of Missouri should be represented.

WE regret to announce the destruction by fire of the office of the *Hawkeye Ornithologist & Oologist* of Cresco, Iowa. Mr. E. B. Webster writes; "Lost about $1,000; had $225 insurance. The *Hawkeye* is in the soup at present. Will settle all claims as soon as possible."

MR. WM. GURLEY, of Danville, Ill., a Geologist of considerable celebrity, recently spent several days in Kansas City. A goodly portion of his time was appropriated by local geologists. The editor of this paper had the pleasure of meeting him at the residence of Mr. Butts, where several of the afore-mentioned geologists had already assembled. The evening was very pleasantly spent in comparing notes and relating personal fossilizing experiences.

Magazines Received.

Ornithologist and Oologist. Frank B. Webster, 409 Washington St., Boston, Mass. Vol, XIV. No. 8. August. 20 pages including cover. $1.00 per year, single copies, 10 cents. The usual amount of interesting reading matter.

The Oologist. Frank H. Lattin, Albion N. Y. Vol. VI. No. 9. September. 20 pages including cover, half of which are ads. $0.50 per annum. Sample copy five cts.

The Entomologist. West, Newman & Co., London. Vol. XXXI. No. 315. August. 24 pages with full page plate illustrating *Atherixibes* and paracites. Price six-pence per copy.

The Youth's Companion comes weekly with its usual amount of entertaining reading matter for all classes.

The New Moon, a monthly, devoted to pure literature and published by the New Moon Publishing Co., of Lowell, Mass., at $1 per year, 10 cents a number, is all its publishers claim for it.

The Oologists Exchange, published monthly at 20 cents a year by Arthur E. Pettit, comes regularly. He can be addressed, Box 2060, New York City.

Books Received.

All books reviewed in these columns are for sale by the Editor of the NATURALIST.

The long looked for book by Prof. Oliver Davie, "*Nests and Eggs of North American Birds*" has recently materialized much to the satisfaction and enjoyment of the collecting Oologist.

It has inceseased in size from 184 pages to a valuable standard work of 468 pages handsomely illustrated with 13 full page plates of characteristic nests; printed on book paper, typographically as perfect as it is possible to make a book of this magnitude; arranged and numbered according to the new A. O. U. nomenclature; with an introduction by J. Parker Norris, we see no reason why this, the third edition, should not be practically indispensable to all Ornithologists or Oologists whether amateurs or Naturalists.

The price, post paid, in paper, is $1.25; cloth $1.75. Orders sent to the NATURALIST will be filled by return mail.

We are indebted to the Secretary of Agriculture, J. M. Rusk, for a copy of Bulletin 1, *The English Sparrow in North America*, Especially in its Relations to Agriculture. Prepared under the directions of Dr. C. Hart Merriam, Ornithologist, by Walter B. Barrows, assistant Ornithologist.

It contains an account of the introduction, acclimation, increase, spread, relation to other birds and to agriculture, together with a mass of accumilated evidence from all sections of the country. It is illustrated and has a map of the U. S. showing distribution.

Domesticus is handled without gloves and in a manner that will certainly attract public attention.

Fishy Clippings.

Wife, looking over bill: "Do you remember, my dear, how many brook trout you caught on your fishing trip last Saturday?" Husband: "There were just twelve of 'em, all beauties; why?" Wife: "The dealer has made a mistake. Only charges for half a dozen."

On Sunday Morning,—Miss Travis: "Oh Johnny! I've caught you with a fish-pole over your shoulder. I shall go and tell your father. Where is he?" Johnny; "Down at the foot of the garden, digging the bait."

Wear your old "duds" when you go fishing. The well dressed and finely equipped fisherman rarely catches anything. Fish are especially shy of dudes, silver-mounted fishing-rods and all such toggery. After all there as been but little improvement on the bent pin.

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NEW YORK CITY. NEW YORK.

The Emancipator.

It is not claiming too much to say that science is the great emancipator of the human race. There is no other class or species of knowledge that has done so much for the benefit of mankind. History proves that as the sciences are developed and applied to the every-day affairs of life, real progress is made. The study of the arts, classics and kindred subjects is very well in its place, but its place is where it will not crowd out the study of the natural sciences.

How is it possible for the human race to advance when it is constantly looking backward for its models? Yet art and classics take us back into the dead past and ask us to study and imitate the models that antiquity affords.

Science asks us to consider the things of to-day. Its persuit brings us into sympathy with the life and thought of the nineteenth century.

One may pore over ancient writings in vain for knowledge to light the pathway that leads him to success in life. The study of art may make him better, but unless he can push himself up to the front rank of its votaries, it will not help him solve the bread-and-butter question, nor surmount the obstacles encountered in life's journey.

When we come to the study of science, the result is entirely different. In the first place, by its study, we learn how to take care of our bodies, avert disease and prolong life. Secondly, by its aid we can determine the true relation of man to his environments. Ignorance of this very important relation has kept the human race in a mental, moral and, to a certain extent, physical bondage for untold ages. It is only within a generation that science has commenced to break the chains that bind our race and hinder its progress.

While man must ever "eat bread by the sweat of his face" and can never be freed from all the responsibilities and cares of the world, science in its various applications, will multiply his enjoyments, increase his capacity for the pleasures and amenities of life and, above all, free him, to a great degree, from the slavery that ignorance of nature's laws dooms him. By the application of the principles of science, man becomes a master instead of a slave.

The great mistake of the world is the belief that a contempt for surroundings and a life aloof from them is meritorious or desirable. One who leads a life that is influenced by such contempt will gradually lose sympathy for the world and the world will lose all sympathy for him and his power for good in the world is gone. He has no influence nor force of character. On the other hand, the one who plunges into the midst of his environments without the knowledge that science affords will, in a majority of cases, become the victim of the popular current that is too often running towards lower levels. Neither view of life is correct. The true philosophy of life is to rise above surroundings by controlling them by the aid that science affords.

It is he who studies man in the light of science, investigates the laws of nature that relate to human environments and applies them in the affairs of every-day life that is a power in the world for good. The poet was right when he said, "I am a man; and I hold nothing alien that is human." Science deals with man and all that pertains to him.

In view of the beneficent inventions that are but the various applications of science, is it too much to say that science is the great emancipator of the human race?

Edwin Walters.

Adamant.

Just at present the architects, contractors and "boss" plasterers of Kansas City are agitated over the advent in this city of a new material for wall plaster. It is not, however, new to the world, having been applied in the east for the past six years, but it has, never-the-less, exploded like a bomb-shell in our midst, and is attracting universal interest from the fact that the manufacturers of Adamant can and do absolutely claim it will not crack or fall from the walls; does not hang a dead weight of 50 lbs to the square yard like common plaster, but, weighing only 25 lbs. to the square yard, and possessing great strength, supports and strengthens all walls to which it is applied; that it is ten times as dense as ordinary plaster, consequently as many times as warm, and also as a sanitary plaster has no equal, as, on account of its density it cannot absorb gases or germs of disease.

It makes a good fire-proof wall, and also on account of its non-conducting properties, makes a building warm in winter and cool in summer. It will stick to any kind of a surface, even glass.

As very little water is used it does away with warping and shrinking of doors and casings and saves waiting several weeks or months for the building to dry out.

When its surface is broken there is no sand to continually rattle out as with common plaster, and in case of leakage will not crumble or fall off. Adamant is undoubtedly the peer of all wall plaster and following its precedent in other cities will shortly supercede all other plasters here in Kansas City.

EXCHANGES.

Wanted to exchange; Coues' "Birds of the North-west" for Coues' "Birds of the Colorado Valley." Wm. Stephenson, Ft. Verdi, A. T.

FOR SALE OR EXCHANGE: Steam engine & boiler. Cost owner $100; will put aboard cars for $40, cash, or will trade for bicycle, printing material or Archaeological specimens. Address A., this office.

FOR EXCHANGE. Fine specimens of polished Am. Bison horns. Want Indian relics. Best offer accepted. Address B., this office.

Will collect local specimens of any kind in exchange for eggs in sets, with data; also exchange eggs. F. N. Nutter, Room 14 Richards Block, Minneapolis, Minn.

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Publisher of the

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The Naturalist.

VOL. IV. KANSAS CITY, KANSAS, NOVEMBER. 1889. NO. 4

Amidst Alpine Glaciers.

It is not my purpose at present to enter into a scientific discussion of the Alpine Glacier, the period of its existance, its instrumentality in the formation of the earth's surface as we find it to-day in Switzerland and elsewhere, and other kindred questions. These are, rather, rambling notes on that land of William Tell; of condensed picturesqueness, of many hotels, of hard working natives and grasping landlords, of radiant sunsets and gorgeous sunrises, and also, as it were, "baled" fog (for it seemed sometimes as if it must have been pressed together by a modern hay press, so thick was it). I mean, of course, Switzerland. In a stay of over a year in that much painted and much "gushed over" country, one, of course, runs across some of its peculiarities. Don't imagine for a moment, however, that I propose to relate some regulation and thrilling adventure in quest of a beautiful Chamois (whose horns are now mounted and hang over my library table), on top of the Matterhorn or some other equally inaccessable peak. I have no tale of some perilous journey through snow, ice, over vast abysses, at great danger to life and limb, wearing out five guides and three porters to gather "Edelweiss" or other Alpine flowers on top of Mont Rosa. I will not relate a marvelous ascent of the Jungfrau, in the wonderful time of two days, three hours, twenty nine minutes and three and a half seconds, under the admiring gaze of numerous excited observers, particularly of the fair sex, located at Interlaken and other more or less adjacent villages and hotels, from which telescopes and other scientific apparatus could be directed on the daring climber. These notes, therefore, may be considered unfashionable and this simple narrative may seem to lack that spirit of truthfulness so sought after by newspaper and other religious writers. But talents are sometimes limited.

At the foot of Mont Rosa there is one or more of those wonderful collections of ice and snow called Glaciers; from this there spring two of the mighty rivers of the European continent, the Rhine and Rhone. The Rhine has found its way to the northward and after awhile leaves Switzerland to persue its windings through Germany and the lowlands of Holland to the sea. The Rhone, however, takes a more southerly course and after passing by some little villages nestled in the valley to the westward, widens out into Lake Geneva, more anciently called Lac Leman, a basin undoubtedly formed by the same glacier, from which the river springs, in the early days of its existance when it covered the entire valley. Not far from where the river broadens into the lake, on the north bank, is the castle of Chillon, made famous by Byron's poem. In the castle, on the edge of the lake, one is shown many of the little devices by which the possessor of the castle extended the "hostilities" of the occasion to its guests. There are thumb screws, iron collars, racks and instruments for "breaking a fellow all up," and other furniture found in fashionable hardware shops of the mediæval day. There is a nice little room over in a corner where you might walk in and soon find yourself precipitated into a dark deep hole and water to stay for eternity. You also see the stone pillar where the noted prisoner was chained and you can almost imagine the weary and shortened steps of the poor old man. About five miles to the west on the edge of the lake, we come to the beautiful town of Vevay. It is in this sheltered spot, with its background of vineyards, as they cover the terraced and carefully cultivated slopes of the hills as they rise around, that we spent many days of pleasant life. Protected from the north winds by the hills, for the Alps proper are in the distance, with the lake at its feet and moderate weather at all times, it is a favorite resort for strangers from all climes. Many a swim have we taken in the cool waters of the lake, many a row and sail on its fair surface, clear as crystal beneath, with still a reminiscence in temperature of its source, the icy glaciers. We have also wandered through the neighboring vineyards picking grapes where we wished; we have seen the grapes gathered and taken to the wine press and we have, afterwards, tasted of what we had good reason to believe was the pure juice of the grape. But that was in Switzerland and not in Kansas City. But we must pass on hurriedly some forty miles, to the end of the lake, stoping for a short while only at Lausanne, where Gibbon lived and wrote his famous history, till we come to the charming city of Geneva. We now leave the Rhone, as it soon passes out of Switzerland, joins the Saone at Lyons, France and proceeds on its way southward to empty into the Mediteranean near Marseilles. Geneva, that centre of culture, the home of celebrated men of many ages, notably Calvin, would be worthy of extended notice, but we must hurry through it and take the diligence (or stage we would call it), for another glacier and the greatest mountain of Europe, Mont Blanc; up we mount and take an outside seat; Crack! goes the whip and off the four horses start on the way to Chamoniux. This place in the midst of the mountains, devotes itself exclusively and extensively to "taking in" tourists literally, figuratively, poetically and every other way. It is like all places similarly situated in Switzerland. Switzerland does not feed on the fat of the land but on the fat of the tourists. Switzerland, at least among the Alps, is a land flowing with milk and honey; that is, goats' milk at about a dollar a quart to tourists and honey barrelled and shipped in from Italy or some other foreign country and served on the hotel breakfast tables, terms invariably to tourists (no discount to the trade): about fifty cents a lick, napkins and service extra. There is about a proportionate rate of charge for wood carvings, photographs, Alpine sticks and other mementoes and devices peculiar to the wants of the tourists; for the natives are too wise to attempt to wrest their living from the rocks, hills and mountains entirely. Let us cool off our indignation on that celebrated glacier usually known as "Mer de Glace," or "sea of ice." We can cross it not too far up among the mountains or we can go in its caves as it terminates in the valley. All around are mountains. In the distance, if clear, we see the mighty Mont Blanc rearing its perpetually snow clad heights on which the sun glistens. None but the hardiest and most skillful climbers ascend its majestic sides to the top. The feat, if accomplished, is celebrated for days afterwards and the performers might become members of the English "Alpine Club." Space will not permit me to specify the details of the trip over the pass called "Tete Noire" back into the Rhone valley, during which we wrestled in body and mind with that animal or beast of burden known to the world as the domestic ass and employed so often in Switzerland for purposes of mountain transportation, weariment of temper and destruction of a useful portion of male attire. A tramp to Zermatt, at the head of a valley running south from the Rhone valley, brings one in the midst of snow capped peaks and the magnificense of Alpine scenery. Here we are at the foot of the Matterhorn, a shaft of stone most difficult of ascent, shooting high in the air, a mass of rock without vegetation, with almost perpendicular sides. The attempt to scale its ice covered heights is sometimes made. But as you look at the graves of some of the daring climbers, as they lie at rest in the little church yard in the

valley beneath, you think with sadness of the ambitions and perils of the sturdy climbers who have at last fallen victims to this most trying of Alpine ascents. The sight of those dazzling peaks and mountain tops seem to incite men to foolhardy feats. They seek to rise to nature's heights and attempt the almost impossible, with what dire results simple grave stones in the shadow of that quiet church forcibly tell. The Grimsel pass leads over the mountains to the north of the Rhone valley. High up the mountains, in the midst of ice and snow in July, and on the border of a desolate and deserted looklng little lake is a "Hospice" of a band of monks, similar to that of St. Bernard, so celebrated on account of its dogs. Here we partook of the hospitality so freely offered by the "brotherhood" for which we pay in contributions for charity. Thence we continue our trip down the valley on the north, on our way to that gem of Swiss cities, Lucerne, on the borders of the lake of that name. From here we take a boat for a mountain noted for its unparalleled views, the Rigi. On two spurs of its summit we find two "hotels" or "tourist traps" called the "Rigi Kulm" and "Rigi Scheideck." It is in these that you are aroused at an unseemly hour of the morning by the sound of the Alpine horn or similar torture, and rush out in a costume of blankets or other bed room furniture within grasp, to witness a gorgeous mountain sunrise or a condensed bank of clouds; more often the latter. The "Rigi Scheideck" has also the additional attraction, I was told, of "wine or milk baths." We did not indulge in or dally with these exhilirating amusements. Just about this time we were taking our milk and wine in smaller quantities and in a different and less expensive way. We would like to mention also, the baths in the midst of the "Gemmi Pass" called "Lenkabad," where "cranks" and a few others soak themselves for hours at a time in water hot from the ground. But we must leave these, as well as the chapel of William Tell and other interesting points, a glimpse at the subject of "lake dwellers" in the very early life of the country; at the peculiarities of land holdings education and other phases of national existance, to some future time.

Switzerland in its government as well as its scenery is of peculiar interest to Americans. In its laws and customs it is more nearly like the United States than any European nation. In its rocky fastnesses all Europe has been unable to awe it or subdue it. The spirit of freedom dwells in its mountains and its people, and in everything in fact, particularly in the amount of its charges to tourists. The spirit of extortion is the only drawback to the fair fame of a sturdy and grand republic.

FRANCIS A. LEACH.

Subscribe for THE NATURALIST, vol. IV, only thirty cents.

FOR THE NATURALIST.

Palaeontological Discoveries In and Near Kansas City, Mo.

BY DAVID H. TODD.

To the student of natural history whose mind turns to the study of Rocks, no field, with perhaps one or two exceptions, presents a greater variety of fossils. Surrounded as we are, with such a variety of rock and shale, the Palaeontologist is never at a loss to know where to spend his time looking for something to add to his and other collections. Our fossils are known all over the world, and there is scarcely any collection of note but has some representative from Kansas City. Here the many families characteristic of the coal measure are represented, and every now and then the collector is startled by the announcement of something new, or some of the already known specimens found in a new locality. The exact number of species so far discovered cannot be fully determined, owing to the fact that there has been so little organization of any kind on the part of our local scientists. Before giving an outline of the species found here, I desre to say a few words of some of the early collectors. The first, and one to whom much credit should be given, especially by the Kansas City collectors, is Mr. Wm. H. R. Lykins. For more than forty (40) years Mr. Lykins has spent his spare time in the field, and in that time has made two collections; the first was destroyed during the Lawrence raid and massacre by Quantrell. Mr. Lykins has written a number of very important scientific articles, and a few years ago he compiled a list of Kansas City fossils which was published in the *Scientific Review*.* For the last few years Mr. Lykins has been confined to his home and the Kansas City collectors have lost a congenial companion and friend in field work. Yet he is spared; and at his home the scientist is always greeted with the same friendly spirit as of old.

About 1870 Mr. Wm. H. Reed began cracking rock in Kansas City and made a fine collection. Of late Mr. Reed's interests have been so great as to prevent him from work in this direction.

About this time Mr. A. P. Childs began collecting, and for a few years was deeply enthused.

A few years later Mr. Sid. J. Hare entered on the scene of action, a boy of ten years. From that time to the present he has been an indefatigable collector. In that time Mr. Hare has made two collections. The first was sold to Mr. W. E. Winner of Kansas City. The second will surpass the first.

In 1876 Mr. Parish came to Kansas City and made a valuable collection which was sold to the Lawrence University of Kansas.

About the same time the Rev. Dr. Bennet of Kansas City, Kansas, entered the field and has energetically persued the study of our rocks. Mr. Bennett, beside making up his own collection, is also making two collections for church schools of the Episcopal denomination.

Judge West made a valuable collection for the old Kansas City Academy of Science. For the past six years he has given his entire time to collecting for the Lawrence University; and the credit for the museum of the University is due largely to his field work.

A number of lesser lights also appeared and passed from the scene of action.

Within the last few years Kansas City has received valuable acquisitions of scientists in the persons of Mr. E. Butts, who, beside his geological collection, has one of the largest archaeological collections in the west; Mr. E. T. Keim, who spent thirty years in the Galena limestone district of Dubuque, Iowa; Frederick McIntosh, E. Boyd Smith, Chas. Dawson, Edwin Walters, R. B. Trouslot and many others, all deeply interested and enthusiastic in the pursuit of science.

Situated as we are in the centre of the upper coal measure region, surrounded by massive bluffs with varying stratification of different rocks; the student stops and wonders at the great and Wise Creation by the Giver of all Good Gifts, and, as he pauses, his mind penetrates the rugged scene before him. Here the massive blue and white limestone, the Oolite and different layers of shale greet his eyes. He looks in wonder and astonishment, and armed with chisel and hammer he begins to open up the hidden pages of past ages. In our next we will tell you what he finds.

[To be continued,]

* No longer published.

Missouri's Geological Survey.

From the Topeka *Capital*.

Missouri, by means of a Geological survey of the state, which is about to be made, will attract attention to her subterranean wealth. There is no question that our neighbor has abundance of minerals, and of great value, easily accessible. Her timber lands are all extensive and valuable. If it were not for politics Missouri to-day would be one of the foremost, instead of the most backward of the states. Missouri Democracy has been a Jonah. If the state would once go Republican, a tremendous boom would follow.

THE NATURALIST is a non-partisan publication and inserts the above item, not to endorse the sentiment, but to call attention to the fact that the work of the Survey is actually in progress at many points throughout the state, and from personal knowledge, feel justified in predicting important results, both economic and scientific, under the able direction of State Geologist, Prof. Arthur Winslow.

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All copy for December No. must be received by us before November 25th.

DR. J. H. OYSTER, of Paola, Kansas, a Botanist, was unanimously elected to honorary membership to the Kansas City Academy of Science, at a recent meeting.

DAVID H. TODD, of Kansas City, Mo., the Geologist, recently spent several days in St. Louis, looking up matters pertaining to his favorite study.

E. T. KEIM, an indefatigable hunter of fossils returning from a short visit at St. Louis, reports a fine Archæological display at the Exposition. He also found a magnificent showing of Adamant by the St. Louis Adamant Co., and speaking of Phonographs, he said there was no end to them and that they were listened to by more than 13,000 people each week. The Phonograph has undoubtedly come to stay and is already rapidly supplanting both the poor and expensive Amanuensis, there already being more than two hundred in practical use in the state.

A RECENT letter from Mr. E. L. Brown informs us of a prospective trip, this winter, "away back in the interior, trading with the Chippewa Indians, near the Lake of the Woods." He fully expects to get a number of fine Moose and Carribou heads, and some other rare animals, such as Fisher, Martin, Beaver, Lynx, etc. He has recently returned from the lake and reports seeing many Grouse Partridges, Pine Grossbeaks, Black-headed Woodpeckers, Snow Buntings, etc. Any of our friends desiring specimens from this locality can leave their orders with us and we will see that they reach Mr. Brown.

REFERRING to the article on Palæontological Discoveries in Kansas City, on opposite page, it is proper and fitting to add that Mr. David H. Todd, the author, is one of the best posted and most industrious collectors in the state. His cabinet of well defined and labelled specimens is unequaled. Visitors from all over the country take pleasure in examining them. Mr. Todd's services have been recognized by the naming of a Nautilus in his honor, "*Cepholopoda discites toddanus*." In No. 2 of this volume, is a short biography of Prof. Edwin Walters, who is briefly referred to in Mr. Todd's article. Speaking of collections, that of Mr. Edward Keim is quite extensive, having received several premiums at state and county fairs; it is well worth a visit from anyone.

THE Academy of Science, met in the Art Association rooms, in the Bayard building, Tuesday evening, Oct. 22nd. The routine business was hastened through with that the members might listen to an interesting article on Alpine Glaciers, by Francis A. Leach, which we publish in this issue, and to remarks from State Geologist Winslow, who was present. Prof. Winslow stated that he was agreeably surprised at the interest and activity displayed by local societies in scientific matters, and that he would be pleased to co-operate with all such. In briefly outlining his future work, he stated that considerable attention would be devoted to the south and southwestern portion of the state, in connection with the United States Geological Survey, and that a good deal of time would be devoted to building stone, clays, sands and especially the coal of the state. Prof. Winslow with Prof. G. Hambach, of Washington University, of St. Louis, Mo., also Assistant State Geologist and Palæontologist to the State Survey, visited Kansas City on the 3d and examined several large private collections.

LEO LESQUEROUX. Inteligence is received of the death of this eminent man. Born in Switzerland, Nov. 18th, 1806; embued with love of liberty and with that candor which has been one of his characteristic traits, he became involved in a political turmoil which resulted in his coming to America in 1848. His literary activity is shown in many contributions to the scientific publications of the day. The "Geological Surveys" of Arkansas, Illinois, Kentucky, Ohio and Pennsylvania contain his reports on the coal formations. Some of his papers, which are universally accepted as authority, are "Catalogue of the Fossil Plants from the Coal Measures of North America," "Cretaceous Leaves of Nebraska," and up to the day of his death was employed in working up the Palæontoligical collections of the United States surveys in the Territories, many of them appearing in the Government Reports from 1870, to date. We are permitted to copy a portion of a private letter, which says "Our venerable Palæobotanist, Prof. Lesqueroux, has gone to his long rest, and whose place will not be readily filled. His enthusiasm was invariably communicated to all around him, and his charming, genial, unselfish disposition won the love and esteem of all who met him."

MR. FRANK SPRINGER, of Los Vegas, N. M., paid Kansas City a visit last month; his mission being purely of a scientific nature, having come here to examine the Crinoids lately found in this city. He spent some time taking notes and examining specimens in the collections of Messrs. Todd, Hare and Butts. Mr. Springer is one of the best Palæontologists in the country, having devoted over twenty years of his spare time to the study of Crinoids. He, with Dr. Wachsmouth of Burlington, Iowa, have compiled and published several volumes of the *Palæcrinoidea*, and are now working on one of the most expensive and valuable works on Crinoids ever published, which will give the drawings and description of all the known species of American Crinoids. The numerous expenses of the work will be born principally by Mr. Springer. Some idea of the extent of this can be drawn when it is known that a special artist has been employed since 1885, and only fifty plates are ready out of the two hundred (200) that are expected to be used in the forth-coming work; and other numerous expenses, such as building fireproof vaults for all type specimens used in the work. Mr. Springer is a lawyer by profession, and one of the attorneys for the A. T. and Santa Fe R. R., and noted as the attorney for the Maxwell Land Grant Co., where he was successful in winning the final decision of the supreme court. He was also one of the delegates to the late Constitutional Convention of New Mexico, where he obtained an unanimous vote on the section pertaining to the educational department of that state. Mr. Springer was born in 1848, in the state of Iowa. From an early age he espoused the love of science and has devoted all his spare time to the study of Palæontology.

Notes on the Wild Turkey from Arkansas.

Although Arkansas is a favorite place for birds and is frequented by many of the rarer species, I have seen but little notice given it. In many lacalities the Wild Turkey is a common resident and numbers are killed for game. This grand bird falls victim to many a hunter who is skilled enough at mimicry. They are exceedingly wary, notwithstanding they may be easily called up and shot down. If one undertakes to slip up on a flock of these he often finds himself sadly left. On the other hand if you sit by a tree or stump when calling them up you are a tree or stump, or, if you lie by a log you are a log, so to speak, and will not be seen. At a distance this grand bird presents no striking appearance, but looked at nearer you find it a bird of "fine feathers." The neck and body are covered with blackish feathers irridescent with blue, green, bronze and golden. The tail is brown, barred with black. The wings are grayish. The female is much duller in color and is not so large. Both sexes feed together during fall and winter, but in the latter part of March the females hide from the males, and in April and May they steal their nests away in some thicket, laying from eight to fifteen eggs of a dirty cream color, splotched and dotted with cinnamon brown.

When the little ones are hatched they are "on the go," the mother keeping them in a secluded place until they are able to fly. When suddenly approached they scatter like Quails and their mode of collecting is similar. Several broods often join and remain together until the mating season.

The drumming noise made by the males when strutting, is produced in the lungs by inhalation, and not in the quills as is commonly thought.

The study of this bird is difficult but interesting, and we may feel proud that we have such a bird for our Thanksgiving.

"Arkansaw Hoosier."

Clinton, Arkansas.

Academy of Science.

Wichita, Kas., Oct. 25.—Special to the Kansas City *Journal*—The Kansas Academy of Science elected officers to-day as follows: President, George H. Fallyear, of Manhattan; First Vice President, D. S. Kelly, of Emporia; Second Vice President, F. W. Cragin, of Topeka; Secretary, E. H. L. Bailey, of Lawrence; Treasurer, J. D. Graham, of Manhattan; Librarian, B. B. Smythe, of Topeka; Curators, A. H. Thompson, of Topeka, R. Hay, of Junction City and T. C. Jennings, of Topeka. It was decided to hold the next meeting at Lawrence. To-morrow will be spent at Kingman.

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ALL publishers sending their paper regularly to our office will receive THE NATURALIST, our official organ, in exchange.

Recently, the *Journalist*, of New York, a paper for professionals, offered prizes for articles on Amateur Journalism. Several of these prize articles have already been published: we hope more will follow.

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Phoca Vitulina.

The Hair Seal, one of the family of *Pinnipeds*, is popularly thought to be shy and owing to its flattened brain case, somewhat dull and stupid; yet a visit to the grounds where Herr Karson's trained Seals are kept, would soon correct the error. The Seals, five in number, are named "Baby Mine," "Geo. Stahr," "Bes," "Paul" and "Clown." Each is provided with a sloping box, upon which they perform. On this box is painted the name of the animal to which it belongs, and no matter how often the position of these boxes is changed, using every conceivable device to confuse them, yet as each name is called, they move to it, in their awkward fashion, without the least hesitation, and assume their proper place. A bell fastened to a board, with a small chain attached, is placed before them and at the command of the trainer, one of the fingers or claws of the fore foot is thrust into the ring and the bell rung many times. Then a tambourine is set before each Seal and a snare drum before the leader; to his flipper is strapped a drum stick, then the signal to commence the concert is given and the whole audience is convulsed with laughter at the energy displayed and the amount of noise made, the Seals showing by the constantly turning of the head their evident enjoyment, and are only stopped by the stern command of their trainer. Besides this they drive a sewing machine, fire off guns, smoke pipes, throw the head back and make a noise between a bark and a snarl, dance and waltz in the water in a very graceful manner, keeping time to music. When hungry they strike the fore foot rapidly up and down on the floor, like a dog wagging his tail and in all their actions displaying an intelligence and sagacity truly wonderful.

Books Received.

All books reviewed in these colums can be obtained from the Editor of this paper.

THE REPORT OF THE COMMISSIONER OF AGRICULTURE—Hon. Norman J. Colman, published at Government Printing Office, Washington, D. C. 1889—is a model work, replete with facts of current and timely topics of interest to the farming community. The report on Truck Farming should be in the hands of every market gardener. The report of the Ornithologist and Mammologist is a valuable contribution to the domain of Economic Ornithology. The Crow (*Corvus americanus*) is put on trial and a mass of reliable and trustworthy evidence is concisely brought out, impartially considered and a summary showing that the damage to crops, eggs and young of birds far outweighs any benefit derived from the destruction of mice or their services as scavengers.

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The Naturalist.

VOL. IV. KANSAS CITY, KANSAS, DECEMBER, 1889. NO. 5.

For THE NATURALIST.

Antiquity of the Mounds.

Of late years there seems to be a growing tendency on the part of "official" scientists to discountenance the view that the pre-historic earthworks, scattered so profusely over the Great Basin, are the remains of an ancient and extinct people, who preceded, at some past epoch, the red-Indian, in this part of the New World. This skepticism is not altogether new; but its bearing on Archæological studies in America has only become of importance since the savants connected with the Smithsonian Institution have become its propagandists. Even though no other authority should concur with our new Doctors of the Sorbonne, yet so advantageous is their position, so easily, widely and inexpensively (to themselves) are their doctrines disseminated, that no mere private doctrinaire can pretend to compete with them. In truth the government gives its sanction to their views; and the same Congress that orders the printing of the nation's municipal laws, also authorizes the printing of the determinations of our scientific law-makers. This is not said by way of censure, for it is proper that government should take active interest in all enquiries looking to the enlargement or the definition of human knowledge; but at the present stage, it must be said that the publications of the Institution never contain papers which antagonize the official views of its responsible dominators. Among those whose enquiries into American archæology and ethnology, have given lustre to the Institution in late years, is Prof. Cyrus Thomas. A few years ago he was known principally for his ingenious attempts to decipher the Maya hieroglyphs, which resulted, it seems, in his connection with the Washington scientists. Since then he has entered the field of exploration; and the special purpose of his work is to prove from the mounds themselves that they are the work of the modern red-man. It seems to a causual enquirer into these mysteries, that a preconceived theory formed by the explorer would largely destroy the usefulness of his results; for so long as men are not gifted with a divine impartiality, when their own opinions and projects are in the balance, just so long will facts be perverted, manufactured or concealed to suit the occasion.

It is not the purpose of this brief note to attempt any review of the pamphlet of Prof. Thomas, issued by the government, on "Work in Mound Explorations of the Bureau of Eethnology;" but as this is the avant courier of a large work on the subject soon to be issued by the bureau, consisting of "two quarto volumes of about 500 pages each," it will be of service to consider a few of the thirteen propositions or laws it lays down which must hereafter govern us in considering this subject.

Before referring to these, however, a few observations will not be out of place. It is useless in the present state of our knowledge to discuss the origin of the aborigines dwelling in this country when first discovered; but the conclusion must be irresistably reached by every student of the subject, that they must have dwelt here for many centuries prior to discovery. Were they preceeded by others? or were these red men the earliest comers to America? There are two facts known to us which may help to elucidate this question. (1) These aborigines were either savages, pure and simple or were just emerging from this state (of course reference is made to the Indians north of the Rio Grande). (2) These savages were universally possessed of at least one plant in a state of cultivation of which no representative in a wild state is known to exist. Is there another instance in the wor d, of such a coincidence? It is granted that there are other savages in other lands using similar plants but in every case the introduction of the plants resulted from contact with civilized peoples. If the American savage did not inherit the knowledge of the cultivation an use of Indian corn from some old and vanished and more enlightened race, he either discovered it himself or received it from Mexico. The latter may seem probable, but if the peculiarities of savage life are recalled, and the vast distances between Mexico and the Mississippi, great difficulties arise against the acceptance of this view. Besides it was known equally to the Indians of Virginia, Canada, Peru and to the natiives of the West Indies. How came it among the latter from Mexico, whose commerce was carried in canoes? Cuba is separated from Mexico by wide and tempestious waters and was totally unknown to the dwellers on the continent —as much so to those of Florida as to those of Yucatan.—Again the inhabitants of each distinct region where maize was cultivated, had only the grossest myths to account for its origin. This fact alone would throw its introduction back many centuries: while the rise of Aztec power in Mexico is considered to have occurred within two centuries prior to the Spanish invasion, and the followers of Morgan even contend that they were nothing but savages. So here is the anomaly of a plant totally extinct in the wild state and yet cultivated by savages, all over a vast continent, including both North and South America as well as the Islands contiguous to both; an anomaly all the greater, when we recall that these savages as known to us in the north, were migratory hunters. It is simply incredible that maize and tobacco should have become so universaly used in aboriginal America, without the pre-existance of some dominating and enlightened race; especially so, as there existed in various parts of this vast region many articles of food and utility, totally unknown outside of the region of their use. For example, we are told by Humboldt that the potato (certainly as valuable a food as corn) was cultivated only from Chili to New Granada at the time of the conquest, not being known even in Mexico.

These considerations certainly point to a prehistoric race in this country much further advanced in peaceful arts than the red-man—a race, too, that must have preceded the Aztecs and Peruvians for these latter, though far advanced in some respects and both using maize were entirely ignorant of each others existance. It is curious also, that the plants used universaly in the north were also used throughout the continent, while those of the south, especially, the potato, had not become known further north than New Granada. Would not this indicate that the supposed forerunners migrated from the north, carrying their discoveries with them, and making new ones on the way?

Now a few words as to two of the thirteen theses of official science: The third of these is that "nothing trustworthy has been discovered to justify the theory that the Mound Builders belonged to a highly civilized race, or that they were a people who had attained a higher culture status than the Indians." There is some disingenuousness in this. No one, not even the wildest visionary, has ever claimed that the Mound Builders were "a highly civilized race," so this may be passed. It is claimed, however, that they were "a people who had attained a higher culture than the Indians," by every investigator that ever examined the subject, and committed his reflections to writing, prior to the rise of the official opinion now propagated. Prof. Thomas, with a modesty that must commend him to the discerning states that "the splendid fabric" which has been built upon the facts adduced by all previous investigators, is a work of the imagination, and will fade from

sight at the touch of his superior potency. This may be. It is undoubtedly old fashioned to believe in American antiquities, and quite a recommendation for any one that he has succeeded in raising some doubts over an American archæological find. But it is amusing to know that in a subsequent pamphlet on "The Circular, Square and Octagonal Earthworks of Ohio," Prof. Thomas finds such evidence of geometrical knowledge in the construction of certain of the Ohio works that he is forced to say that, while "there is nothing in them or connected with them contrary to the theory of their Indian origin, except it be the single fact that a few of them approach very nearly to true geometrical figures," yet "that Indians are less able now to perform many things which necessity formerly compelled them to practice;" and once more, "No valid reason can be presented why Indians taught by necessity and practice, could not lay off by the eye and by means at hand, figures with which they were familiar, more correctly than the white man, without instruments." It is impossible to believe that the learned Professor was ever personally acquainted with an Indian, after such statements. Some inkling, however, of the straights to which the official mind was driven, can be perceived by means of these quotations, upon which comment is unnecessary; the Professor's own words best answer his thesis.

The ninth is the only other proposition I shall notice. This is a bold statement that the red-Indians and the Mound Builders were the same. When it is recalled that a large portion of the mounds were known to the earliest comers into the Great Basin, and were mysterious antiquities to the Indians then; that objects have been taken from the mounds that display a different dress and different arms from any worn by the red-Indians; that some of the works display such vast expenditure of menial labor, that no one with a knowledge of Indian character, from old Capt. John Smith down to Kit Carson, could be made to beleive them capable of it; one can appreciate the delicious audacity displayed. In the Cahokia mound alone was 14,000,000 cubic feet of earth; that is over 1,000,000 wagon loads and at least 10,000,000 "Indian loads." That is, it would require from 1,000 Indians 10,000 loads each to erect it. Banish the thought that the "Noble red-man" could ever have been brought to this condition. This stupendous mound alone is sufficient to interpose as positively decisive that its builders and the red-man were totally and radically distinct; and all the Professor's remarkable "links" cannot make them the same—unless, indeed, the Professor got his notions of Indian character from Cooper's novels.—*W. W.*

"We hear of African slaves being bound in Morocco. Is not this a little too luxurious?"

William Ferrel.

A COMPLETE LIST OF HIS PUBLICATIONS.

There lives, in our midst, at 1641 Broadway, the most eminent Meteorologist the world has ever known; Prof. William Ferrel, possessing world wide fame, yet engulfed in local obscurity. He was born in Bedford county, Pa., January 29, 1817. When 12 years of age, his father moved to a farm in Berkeley county, Va., where he spent his boyhood. In 1839, Ferrel entered Marshall College, Mercersburg, Pa. After reaching the junior class, he entered Bethany College, graduating from that institution July 4, 1844. Following this, he spent a number of years teaching; pursuing, all the while, the bent of his childhood, and from time to time contributed articles of scientific value to the leading scientific journals. In 1882 Prof. Ferrel engaged in the work of the signal office, at Washington, where he remained for four years. He came to this city about three years ago. He is a member of the German, French, English and Austrian Meteorological Societies and was recently elected to honorary membership to the Kansas City Academy of Science. The following is a complete list of his scientific papers.

On the effect of the Sun and Moon upon the Rotary Motion of the Earth.—*Gould's Astron. Jour.*, III, 1853, 138–142.

On Vision.—*Nashville Jour. Med. & Surg.*, VIII, 1855, 22–28, 92–102 & 192–202.

On the variable Star Algol.—*Do.*, VIII, 277–282.

An Essay on the Winds and the Currents of the Ocean.—*Do.*, IX, 1856. Republished in *Professional Paper of the Signal Service*, No. XII, 1882.

On The Gyroscope.—*Do.*, IX, 1856.

The Problem of the Tides with regard to Oscillations of the Second Kind.—*Gould's Astron. Jour.*, IV, 1856, 173–176.

Influence of the Earth's Rotation upon the Relative Motion of bodies near its Surface.—*Do.*, V, 1858, 97.

The Influence of the Earth's Rotation upon Rotating Bodies at its Surface.—*Do.*, V, 113–114.

The Motions of Fluids and Solids Relative to the Earth's Surface.—*Cambridge*, Mass., *Math. Monthly*, I & II, 1858 & 1859, passim. Republished in *Professional Paper of the Signal Service*, No. VIII, with notes by Prof. Frank Waldo. Abstract in *Amer. Jour. Sci.*, XXXI, 1861, 27–51. Republished in *Professional Paper of the Signal Service*, No. XII.

Narrative of the Amer. Exp. to N. W. British America to observe the Total Eclipse of the Sun, July 18, 1860. *Amer. Jour. Sci.*, XXXI, 139–142.

On the Cause of the Annual Inundation of the Nile.—*Do.*, XXXV, 1863, 62–64.

Note on the Influence of the Tides in Causing an Apparent Acceleration of the Moon's Mean Motion.—*Proc. Amer. Acad. of Arts and Sciences*, Boston, VI, 1864, 379–383.

Communication supplementary to the preceding.—*Do.*, 1865, 390–393.

On Certain Formulæ of Interpolation, —*Do.*, VII, 2–12.

On an Annual Variation in the Daily Mean Level of the Ocean, and its Cause. —*Do.*, VIII, 1865, 31–36.

The Cause of Low Barometer in the Polar Regions and in the Central Parts of Cyclones.—*Nature*, IV, 1871, 226–228. *Van Nostrand's Eng. Mag.*, V, 525–527. Republished in *Professional Paper of the Signal Service*, No. XII.

The Constant Currents in the Air and the Sea.—*Nature*, XI, 186–187.

Relation Between the Barometric Gradient and the Velocity of the Wind.—*Amer. Jour. Sci.*, VIII, 1874, 343–344. *Washington Phil. Soc. Bull.*, I, 106–109.

Beziehung zwischen dem barometischen Gradienten und die Windgeschevindigkeit.—*Wien. Zeitschr. Met.*, X, 254–255.

New Converging Series, Expressing the Ratio Between the Circumference & the Diameter of a Circle,—*Smithsonian Contributions*, No. ?

Discussion of the Tides of Boston Harbor.—*U. S. Coast Survey Report* for 1868, Appendix No. 5, 52 pp.

On the Moon's Mass, as deduced from a Discussion of the Tides of Boston Harbor.—*Do.*, for 1870, App. No. 20, 10 pp.

Report of Meteorological Effects upon Tides from Observations.—*Do.*, for 1871, App. No. 6, 7 pp.

Meteorological Effects upon the Heights of the Tides.—*Amer. Jour. Sci.*, V, 1873, 342–347. *Washington Phil. Bull.*, I, 53–54.

Discussion of Tides in New York Harbor.—*U. S. Coast Survey Report* for 1875, App. No. 12, 194–220.

Tidal Researches.—*Coast Survey*, 1874, 4°, 270 pp.

On a Controverted Point in Laplace's Theory of the Tides.—*Phil. Mag.*, I, 1876, 182.

Meteorological Researches for the use of the Coast Pilot, Part I; On the Mechanics and the General Motions of the Atmosphere.—*Washington*, 1877, 4°. Also in *U. S. Coast Survey Report* for 1875, 369–412. Review. *Wien. Zeitschr. fur Met.*, XIV, 1879, 386–390.

Meteorological Researches for the use of the Coast Pilot, Part II; On Cyclones, Tornadoes and Water-spouts.—*Washington* 1880, 4°. Also in *U. S. Coast Survey Report* for 1878, 176–267.

Abstract in *Amer. Jour. Sci.*, XXII, 1881, 33–48. Abstract reprinted in *Professional Paper of the Signal Service*, No. 12, also abstract in *Naturforscher*, XIV, 1881, 345–348, and *Scientific American*, XLIV, 1881, 304. Review in *Nature*, XXV, 155 and 291, also XXVI, 9 and 31. *Wien. Zeitschr. Met.*, XVII, 161–175.

Meteorological Researches for the use of the Coast Pilot, Part III; On Barometric Hypsometry and the Reduction of the Barometer to Sea Level.—*Washington*, 4°. Also in *U. S. Coast and Geodetic Survey Report* for 1882, App. No. 10, 225–269.

Wind Pressure.—*Van Nostrand's Eng-*

lish Mag., XXVII, 1882, 140.

Discussion of the Tides of the Pacific Coast.—*U. S. Coast and Geodetic Survey Report* for 1882, App. No. 17, 437–451.

Report on the Harmonic Analysis of the Tides of Sandy Hook.—*Do.*, App. No. 9, 247–252.

Maxima and Minima Tide Predicting Machine.—*Do.*, App. No. 10, 253–273. Abstract, *Science*, III, 408–410.

Temperature of the Atmosphere and the Earth's Surface.—*Professional Paper of the Signal Service*, No. XIII, 4°, 69 pp.

Solar Thermometer.—*Amer. Met. Jour.*, II, 303–306.

Arago–Davy Actinometer.—*Do.*, 350–354 and 395–400.

Results of Solar Radiation Observations in the Neighborhood of Birmingham, (Eng.); by Rupert T. Smith. Reviewed in *Do.*, II, 563–565.

Relation of the Pressure to the Velocity of the Wind.—*Do.*, IV, 1887, 173–177.

Sensitiveness of the Wind-vane.—*Do.*, III, 452–454.

Note on the Influence of Forests upon Rainfall.—*Do.*, V, 433–435.

Decrease of Temperature with Increase of Altitude.—*Do.*, VI, 145–150.

Comments on Mr. Searle's "Atmospheric Economy of Solar Radiation."—*Do.*, VI, 177–179.

Temperature of the Moon.—*Science*, VI, 1885, 541–542, VII, 32 and 122–123.

Sea-level and Ocean Currents.—*Do.*, VII, 75–77, VIII, 99–101 and 187–189.

Note on the Wind-Pressure Constant.—*Do.*, XIII, 171.

Note on the Robinson Anemometer Constant.—*Do.*, 204–205.

Recent Advances in Moterology.—*Report of Chief Signal Officer*, 1885, Part II, 440 pp.

The Law of Thermal Radiation.—*Amer. Jour. Sci.*, XXXVIII, July, 1889.

Laplace's Solution of the Tidal Equations.—*Gould's Astrom. Jour.*, IX, 1889, 41–44.

A Popular Treatise on the Winds,—*John Wiley & Sons*, New York, 1889, 504 pp

The Anterior Arts.

By "Ictinus."

There is not, perhaps, a more critical subject left to the discretion of the people, in which they differ more widely in their opinions, than in matters pertaining to art; art in general and art in its several branches. Art, as we behold it to-day, is the finished work of the past; its history is the history of nations.

In order to understand and appreciate the value of art, as we see it at the present, we should read what it has been and study the history of its growth. But this is an age of hurry and endless confusion; so we take hasty glances at the arts; all from various modern standpoints. As a natural consequence we obtain different perspective images, or impressions, none of which are exactly alike. We are not surprised that many reach conclusions which are diametrically opposed to those of others. We try to judge the value of the arts from modern standpoints or conditions, when we know that the arts (the work of the past) were developed thousands of years ago, when modern conditions were not even dreamed of.

History informs us that the road over which the arts traveled was not a smooth one. That at certain times they were advanced with peculiar energy, were honored, respected and beloved; while at other times they were fallen into a state of indifference, neglect or contempt. It is, therefore, both wise and natural to divide its growth into periods of glory and periods of barbarism; but it is of the utmost importance to understand the true meaning of these terms and especially of the word "barbarism." A people may be barbarous, that is, savage, fanatical, superstitious, governed by imperfect laws, and yet they may develope a high grade of art; and, on the contrary, a nation may revel in the highest civilization and be arrayed in the most polite manners, and yet, in its arts, be low, degraded and even barbarous. Barbarism, in the sense of cruelty, can have no influence over art, for history affords too many examples of the prevalence of this savage instinct of human nature among people who have brought the arts to the very "acme" of perfection and glory. Thus, while the Grecks were building the Parthenon on the Acropolis, in Athens, they were plunged in all the terrors and cruelties of the Peloponnesian war. While the Romans were spreading their civilization over the known world, and beautifying their empire with monuments and buildings, they were amusing themselves at home by seeing innocent slaves slaughter one another in the arena, and wild beasts devour human victims in the circus; and in later days, when the Christians were adorning the East and the West with the most inimitable works of art, they were burning one another at the stake for mere difference of opinion on their creed. While the French were building the Verseilles and the Invalides, in the midst of a true Augustan Age of poets and artists, the courts of justice of the seventeenth century were barbarously sending to the stake knaves who called themselves sorcerers. History shows, that often, when the state is involved in the miseries and horrors of war, art is developed with unusual energy and, like a helping angel, devotes itself to beautifying the land, by rearing up monuments to the past, and by its silence give evidence of a dawn of peace. It is plain that barbarism, in the senses of cruelty and war, does not materially affect the growth of art. We will now consider the term in its broader sense of uncivilized. When we would compare the condition of art at different periods, the question is not whether this or that period was more or less civilized than another, but whether it was distinguished for qualities more or less favorable for the developement of art. The different branches of civilization do not keep pace one with another, in their onward journey. If they did, our paintings, dramas and sculptures, and our many forms of government and our institutions would all be in advance of those of the past, for we live in the most advanced age. Our poets would excell the "Iliad" and "Paradise Lost," and our dramas would be more expressive than those of Racine; and our church buildings would make even a Gothic cathedral sink into insignificance.

Nations, like people, are less civilized in their infancy, and are most civilized and intelligent after having reached their maturity. They decline when the machinery which combined and held them together, is worn out from over exertion or excessive strain on its power: just as an old man, whose organs have ceased to perform their functions with regularity, falls into his second childhood. Every art age has, in like manner, its infancy, its moment of maturity, that inappreciable interval between progress and decline, and its old age. Its infancy is an anticipation; its old age is a memory of its maturer perfections. Yet, in its different phases, art never becomes barbarous, so long as it remains true to itself. But when it intentionally conceals, or thoughtlessly disregards the laws on which it is based, or the practical needs it is meant to supply; when it yields to the fleeting whims of fashion, then it has become a mere tool for artists, who act from impulse or custom, and emotion, and not from reason; and when expressing no longer the manners of the people who develop it; no longer pliant to all the degrees and necessities of life, it has become a matter of luxury to the few and an object of wonder and curiosity to the many. Then it has ceased to be true art and has fallen into barbarism.

[To be Continued.]

The need for an authoritative reference is a common want amongst those who are either reading up on some special subject or who wish to verify or find a particular fact; to all such inquirers, an encyclopedia is a necessity.

The Encyclopedia Britannica, the ninth edition of which has been just completed, is the latest universal reference book in the English language, and in point of authority and completeness, it stands unrivaled by any in the world. The Scientific, not the Dictionary plan has been used, thus giving us long, full treatises of from 50 to 150 pages on all the leading topics in every department of human knowledge, so indexed and noted, however, that the particular fact desired can be found at once and in its proper place in relation to the general subject to which it belongs. And a noteworthy fact about these long treatises is that they are by specialists chosen from the ranks of the ablest living scholars. Besides these there is a multitude of brief articles supplementing the treatises. American subjects were prepared under the supervision of an American editor, thus insuring their correct and thorough preparation, and in fact all parts of the world have been treated fully, with the single end in view of presenting the facts of the universe, as they are known to the most advanced scholars of to-day. The want of a copyright law has made it possible for alledged reprints of this work to be issued in this country, which in the language of the Faculty of Yale University, "are not only inferior in print and illustration, but more or less mutilated, defective and unreliable for reference, and as unauthorized reprints are unworthy of honest support." Such condemnation, however, has not prevented these so-called reprints from being imposed upon the people and it behooves our readers to beware of such in their purchases. There is but one Encyclopedia Britannica and that is published by A. and C. Black, of Edinburgh, Scotland, which work is imported into this country only by Messrs Charles Scribner's Sons. The Kansas City branch of this house is at 1214 Main street, —*Adv.*

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For THE NATURALIST.

Palæontological Discoveries In and Near Kansas City, Mo.

By DAVID H. TODD.

[Continued.]

In our former article we left the student wondering what was before him, as he is ready to open up the earth's treasures. The study of Palæontology is one full of interesting and exciting scenes. While we endeavor to build up a collection worthy of being called first class, and filled with typical specimens, it is one of long and laborious attention, and *never finished*; for as we advance each day we are constantly adding something new by way of finding or exchanging. Consequently our work *will never be complete*. Many amusing and interesting things come to his notice while gathering specimens. Sometimes, yes often, considerable ingenuity is required to obtain coveted specimens. He is often approached by some unnoticed person, who, from curiosity, stops and wonders what he is doing. The first and universal question is "Hello, pard! looking for gold?" and perhaps he will tell you of some far off field where fossils are as common as hazel nuts. This reminds me of one trip my old friend Mr. Lykins and I took to one of the quarries and found an old son of the Emerald Isle cracking rock. We asked him if he had found any shells, and showed him something we wanted. He immediately seized the idea and asked if it was cockle shells we were after. We told him yes; then he told us that if we were in old Ireland, we could gather them by the million. You will often times hear fossils called by queer names, as petrified snakes, butterflies, spiders, bugs, ram's horns, chicken feet, bird's claws, corn cobs and numerous others. So, you see, the classifying and naming of fossils form the most important part. The mere finding only gratifies the curiosity; while the study of classification, and grouping of the genera and families is the part performed by the Palæontologist. So, as the young student opens up the hidden treasures, he must remember he has only performed the physical part. After he begins to build up a collection he will find that the arrangement requires much time and study. The division known in Palæontology and Geology as the Upper Coal Measures is very large and covers an immense territory. So our fossils have a wide range and present many beautiful and interesting forms. The Upper Coal Measures being in the last shades of the Palæzoic period, which begins with the Silurian and ends with the Permian; the following arrangement will be most likely persued: PROTOZOA,—Order of SPONGIDA, known as the Sponge and kindred families. Several very interesting species of Sponge are found here; some two or three that are as yet undetermined, are very rare with us, in fact, of some of the undetermined species only one or two have been found. *Fusulina cylindrica* is also under the PROTOZOA; it is a small fusiform or subcylindrical shell resembling a grain of wheat. The RADIATA: POLYPI is represented by a number of interesting forms belonging to the genus *Rhombopora*, *Fistulipora*, *Syringopora*, *Lophophylum* and *Campophylum*. ECHINODERMATA: CRINOIDIA. Crinoids are the most interesting and coveted of all fossils; the reason is, first, their beauty and second, the interesting study they give to Palæontologists. There is no other fossil that is so much sought after as Crinoids, and but few exchanges can be made unless Crinolds are given for Crinoids. A large number of collectors confine themselves exclusively to Crinoids. Perhaps the largest and most complete collection of Crinoids in the world is the one belonging to Messrs Wachsmuth and Springer, of Burlington, Iowa. They have spent nearly, if not all, of a quarter of a century in massing together a collection simply marvelous; and have spent, we might say, a fortune in this great work. The Crinoids of the Upper Coal Measure have been given but little attention owing to the fact that but few have ever been found perfect, consequently they have never been thoroughly understood. The recent finding of Crinoids in Kansas City has opened up the hearts and pockets of collectors, and perhaps the highest price ever paid for Crinoids has been given for specimens found here.* Great care must be exercised in the working and cleaning of these specimens as we can afford to lose nothing. So far as my knowledge goes we have found some twelve, and perhaps fifteen species; however, only three or four of these species have been found perfect, while only one or two fragments of some of the species have been found. Of those already found are the genus *Agaceaocrinus* (two species) and only in fragments, yet the basal of both species in Mr. Butts' collection indicate that they were very large, and, as Dr. Hambach of St. Louis expresses it: "They were giants in their way, so to speak." Of the *Erisocrinus*, only one, so far, has been discoverd. Of the *Schaphiocrinus* two species have been found; one with ten arms and the other with seven. The first has the prolonged proboscis and is far the finest specimen ever unearthed. Of the *Zeacrinus* several well defined specimens have been found. Of the *Eupachycrinus* only one species has been found, and only one perfect specimen now in the collection of Wachsmuth and Springer. Of the *Archæocidaris* several specimens have been found; although they are quite rare here, in other places they have been found quite plentifully.—Since writing the above a communication has been received from Mr. Springer, who is of the opinion that the specimens supposed to be *Eupachycrinus* may develop into a new genus.

*Ten specimens sold by Mr. E. Butts to Mr. Springer for $150.00.—Ed.

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MR. WILL. H. PLANK, publisher of the *Literary Companion*, informs us of the organization of a Natural History society in Kansas City, Kansas.

WE note that Mr. G. E. Ladd, a Harvard graduate, recently on the Texas Geological Survey, has been appointed assistant Geologist to Missouri. It takes something of a lad to fill this position.

W. J. GOULD, manager of the National Press Association, for amateurs, who occupied a column in the last issue of this paper writes us that he is compelled to abandon the idea for the present. As he states no reason for so doing we presume it is another case of financial embarassment.

ANOTHER exemplification of the adage; "The pen is mightier than the sword," is furnished in the statement that the Russian government has abolished banishment to Siberia. Following so close upon the publication of George Kennan's vivid description of the treatment of the exiles in Siberia, the inference is plain.

TWO Snowy Owls, *Nyctea nyctea*, were received at the Market Square in Kansas City, Mo., from Kansas, on the 4th of this month. One from Great Bend and the other, alive, from McPherson. Wise (?) weather prophets seem to think this an indication of a cold winter. We will tell you more about it next spring.

WE send out many sample copies this issue, and have striven to mail them only to persons interested in nature. Of course we desire your subscription, but should you not care to subscribe or are not interested in this class of literature, please confer a favor on the publisher by handing this copy to some person known or likely to be interested.

THE Cyclopedias for 1889 contain much notable matter on Geographical progress and discovery. Stanley's earliest dispatches contain many facts relative to the interior of Africa, which will consign many of the maps to the back number list. Dr. Frithief Janser's expedition through Greenland shows that land to be covered with an ice-cap of varying thickness, entirely blotting out the configuration of the land beneath its surface.

DR. OSCAR BRAECKLEIN became a member of the Academy at its last meeting. The Doctor is a pioneer in these parts, having come to the place before Gould determined to make Kansas City a "whistling station." In those days Jack Rabbits were a rarety indeed, while before and immediately following the civil war, *Conurus carolinensis*, Carolina Paroquet, was an abundant resident. The Academy is happy in recognizing so able a man as Dr. Braecklein as one of its members.

SINCE many of the members of the Kansas City Academy of Science have undertaken to not only secure subscriptions for THE NATURALIST but advertising as well, some of the results of which can already be seen in this issue, and as the Academy has adopted THE NATURALIST, now in its fourth volume, as its official organ, we desire to state that, while there is no *big* money in its publication, yet, evenif we were money out, as we have been in times past, its publication will continue as long as we see any interest manifested in its life. Send in your subscriptions and encourage a good cause.

WE publish the following foolish item, going the rounds of the press, which indicates that almost anything, no matter how absurd, will be believed by some one:

There are a number of cats in the service of the United States Postoffice. These cats are distributed through the different offices, to prevent the bags from being eaten by rats and mice, and the cost of providing for them is duly inscribed in the accounts. When a birth takes place, the local postmaster informs the district superintendent of the fact, and obtains an addition to his rations.

IN a former number of THE NATURALIST mention was made of the great attractions at the Paris Exposition, namely the Eiffel Tower and Edison's improved Phonograph. A third feature, not always mentioned, is the scourge of Fleas which attack strangers arriving from all parts of the world. They invade every section of the city, the public vehicles and hotels swarm with them. In the United States "the nimble flea which no man punisheth," makes life miserable to the yellow dog and the vagrant cat; but in Paris the vivacious insect disdains any kind of game but a writhing human victim.

MR. DIXON, the gentlemanly Taxidermist officing at 16, 18 and 20 East Sixth St., Kansas City, Mo., says there is very little demand for first class taxidermal work in his city. Having been there for more than eleven years, he is probably a competent judge, yet, when we called last week we found his "larder" well supplied with a large variety of mammals and birds from all parts of the country. Owls predominated, White Pelicans were common, Californy Mountain Quail were abundant, and Deer heads could be counted by the dozen, besides much other custome work. Evidently Mr. Dixon wont be idle for months to come, and he does first-class work too.

AS several, sufficiently interested in our NATURALIST to subscribe, have kindly sent fifty (50) cents instead of the hitherto regular subscription price, and others have commented on the low price, we have raised same to fifty (50) cents, making, however, several liberal inducements in the way of books, supplies, curiosities and specimens, a list of which appears on the last page of this paper, and which, we trust, will be appreciated by our friends. We feel very kindly towards all of our subscribers but especially so towards those who so generously sent more than we asked. We appreciate your generosity and shall strive to make our small sheet the more interesting in consequence.

WE have received regularly during the past ye ar., that excellent weekly, *The Youth's Companion*, published by Perry Mason & Co., Boston, Mass., Each paper is read and re-read not only by ourselves but by many of our young friends, and older ones too. The choicest literature, suitable for all classes, of all ages, is here presented in the most palatable manner. The popularity of this exquisite publication can better be understood when it is known that more than 400,000 copies are mailed each week, to its subscribers throughout the Globe. By sending $1.75 now, you will receive the *Companion* from now to Dec. 31st, 1889, and for all of 1890. We have become so attached to it that we have arranged for its regular appearance for another year.

MANY of our correspondents seem to be unaware that there is such a place as Kansas City, KANSAS, and persist in addressing their communications to us at Kansas City, Mo. Now the facts are, Kansas City, Kansas, is the largest city in the state, having in the neighborhood of 50,000 population. All the packing houses (but one), which have made Kansas City, Mo. so noted are in this city, and dozens of other industries which have helped to swell the notoriety of Kansas City, Mo. are in Kansas City, Kansas. We are not ashamed of hailing from Kansas, and trust that such of our correspondents who read this item will see that their letters to us, in the future, are properly addressed to :

THE NATURALIST,
1808 N. 6th Street,
Kansas City, KANSAS.

IN our last issue, our correspondent, David H. Todd, spoke of Rev. Dr. Bennett, of Kansas City, Kan. and his Geological collections. Since then we received a call from Dr. Bennett, who not only subscribed for THE NATURALIST, but invited us to examing his collection. At the earliest opportunity we called on the Dr. The size of this sheet only, prevents us from giving an extended account of what we there saw, representing nearly fifteen years of patient and careful collecting in all parts of the U. S. His Nautilus are the largest we ever saw, being more than a foot across, and contrasted strikingly with other minute fossil shells, no larger than a pin head.

Of some species the Dr. has hundreds of duplicates and while always extremely busy, have no doubt he could find time to exchange some of his valuable specimens for others as desirable.

THE Kansas City Academy of Science, at its last meeting, adopted THE NATURALIST as its official organ. It is the desire of the society that the secretarys' reports of the semi-monthly meetings be briefly given. Messrs Chas. Dawson and Edward T. Keim were appointed a committee to edit the papers read before the society, selecting for publication in THE NATURALIST those most desirable. Besides the literary help thus assured, the members have rendered considerable financial assistance in the way of new subscriptions and advertising, which will be of material aid in helping us to improve THE NATURALIST in every way. In consideration of the excessive modesty of certain individual members, we refrain from mentioning names in this respect, but they, at least, know to whom we extend our cordial thanks.

THE Kansas City *Star* says: The naturalists of this country, who started out to raise among themselves a fund for a monument to John James Audobon, having secured about $1,000 and a large collection of promises, have concluded to appeal to the public at large. The world never yet saw a man who knew the feathered tribes as did Audobon. There ought to be a ready response to the call.

The appeal to Naturalists and the public at large was made months ago, through all the leading Scientific publications of the country. We have an electrotype of the proposed monument which appeared in May, 1888 NATURALIST, which we will take pleasure in mailing to any publisher who is dis-to use it. The matter had entirely slipped our attention. We supposed the monument was completed months ago, as it should have been. Brother publishers, keep the stone rolling until the necessary sum is raised.

The Purple Martin.

The Purple Martin makes its appearance in Detroit about the last of April, when it is seen flying over the city and river, feeding on the myriads of insects that abound at that period.

Who has not, on a summer's afternoon, watched the Martin in its irregular flight as it darts hither and thither,now circling above some steeple, for a moment hovering over it as though about to light, now darting in rapid pursuit of some hapless insect, unconsciously swallowing him, immediately ready for another.

Martins are expert at bathing and drinking while on the wing. Spinning along over the water's surface, a sudden movement of the tail ducks the body, rising, they shake themselves like a Water Spaniel. When thirsty, with wings raised at an angle, they sail along close to the water and with successive and rapid dips of the head scoop up a little each time.

The Martin possesses a strong hatred for all cats and dogs, driving away, with a display of great fury every one observed near its home.

There is a large Martin house on a tall pole in our yard, where several pair have reared their young for a number of years. During the winter two smaller houses were put up with a view to inviting the Bluebirds, but when the Martins arrived last spring, they took possession, after driving out the Bluebirds. The Bluebirds were very plucky and courageous, but were compelled to flee from the more powerful blows of the Martins.

Thinking the Martins were greedy, I captured one of them and confined him in a box for awhile; however, as soon as liberated he returned to the Bluebirds' house and resumed possession. Capturing him a second time, I doubled the dose of confinement to no effect. Becoming angry with Mr. Martin, I again succeeded in capturing him, and this time he received such rough handling that he flew away and never returned.

The Martin's chirrup is scarcely melodious; it is principally heard at early dawn and is the signal for rising for the industrious farmer and planter. The Martin's nest is built on that of the preceeding year or repaired, about ten days after his arrival here. It is composed of grass, leaves, hay, paper, feathers and frequently rags. The eggs, which are pure white, are from four to six in number. Two broods are reared each season. The male assists in the labor of incubation. Their food is entirely insectivorous, and frequently, on examining their stomachs I have found beetles of enormous size.

G. H. R., Detroit, Mich,

An exchange announces the discovery of a fossil forest near Frauent, Scotland. Some forty or fifty tree trunks have been laid bare. The full dimensions of the forest are as yet only conjective. One trunk is nearly three feet in diameter. They are for the most part of free stone.

A Portable Fishery.

One morning last month the United States Fish Commission car, under the management of J. Frank Ellis, was stationed at the Union Depot for the purpose of distributing German Carp to those who desired them, about 7000 being distributed throughout Kansas. It is said that 17,000 of these fish were taken from the hatcheries, at Washington, during the month of September. On leaving Kansas City, the fish car returned to Washington to get an invoice of several thousand Trout and Salmon, which it will bring to the West for distribution. Mr. Ellis said a distribution of Carp made several years ago, has spread so rapidly in Missouri that it was not necessary to bring any more here. Missouri is one of the best localities in the United States for fish breeding; streams of all sorts, from the Big Muddy to the frog ponds, being adapted to the breeding of Carp. Anyone can have fish sent out by the United States Fish Commission, from the point of distribution, by paying the express charges. Kansas City is the distributing point for Kansas and Missouri. Mr. Ellis promises, upon his return, to bring an abundance of Salmon, of the Northern Lake variety, and experiment with them in the pools and streams of this state. He also promises to bring a large number of Gold and Silver fish as well as fancy fish of other varieties, which he will distribute among the ladies of this city who want them. The Carp were kept in gallon cans, each can having holes bored in the cover to admit air. They are loosely packed in the top of the refrigerator at the bottom of the car, suspended on springs to prevent too violent jolting.

W. A. M. of Washington, D, C. writes: Have lived in Washington, near the Capitol grounds,for a number of years. These grounds are extensive, comprising 51½ acres, and are covered with a great variety of trees and bushes, interspersed with fine lawns. Under the trees and bushes are oblong strips on which the scientific name and native country of each plant is painted. This shrubbery affords fine nesting and breeding places for the birds coming here, which are strictly protected by law.

About the latter part of March, Purple Grackles literally covered the tree tops, filling the air with their creaking "hingy" notes. During spring and summer I have seen Catbirds, Robins, Bluebirds, English Sparrows, Cedar Birds, Summer Redbirds, Mourning Doves, Red-winged Blackbirds, Wrens, Meadow Larks, Goldfinches, King-birds and numerous warblers. I hope to make the list more complete next season.

If you are not already a subscriber please remit us thirty cents for THE NATURALIST, vol. IV, back numbers included, without premium; see pages 7 and 8.

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From Rev. H. W. Thomas, D. D., Chicago, Sept. 8th, 1881: A careful comparison of the merits of the "Stoddart" Edition of the Encyclopædia Britanica convinces me that it is by far the more accurate and reliable. In point of accuracy it is far superior even to the "Original" English work.

From J. M. Greenwood and C. W. Judson. We subscribed for the Stoddart Co's. American reprint of the Encylopædia Britanica, when it was first issued, as a reference book in Kansas City public library, believing it to be the cheapest, most reliable and complete encyclopædia offered for sale. Since the publication of the first volume that opinion of each subsequent volume has only been more strongly confirmed. J. M. Greenwood, Supt. Schools, Kansas City, Mo. C. W. Judson, Librarian,

S. A. PARK, General Agent for the West.
ROOM 49, Hall Bldg. 9th and Walnut,
KANSAS CITY, MO.

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will be inserted free for actual subscribers.

Copy must be detached from letter and written on one side of paper only; not to exceed four lines, including address, estimating eight words to the line.

I have a large number of first-class eggs in sets, to exchange for others. W. F. Lewis, East Liverpool, Ohio. Lock Box 333.

Will exchange Mounted birds, or green skins for birds not in my collection; Would like Waders, Swimmers, Game Birds, Gulls and others. W. H. Parker, Tax., Abilene, Kansas.

FOR SALE OR EXCHANGE: Steam engine & boiler. Cost owner $100; will put aboard cars for $40, cash, or will trade for bicycle, printing material or Archæological specimens. Address A., this office.

FOR EXCHANGE. Fine specimens of polished Am. Bison horns. Want Indian relics. Best offer accepted. Address B., this office.

I will give first class American or European Eggs in exchange for Indian Relics of any kind. Send list of what you have stating wants, to C., care this office.

For Exchange 52 inch Columbia Bicycle, with bag & wrench. Front wheel is slightly sprung otherwise in good shape. Want $ 50,00 worth of Arrow Points. Axes, and Indian goods. Address Amateur, care of the NATURALIST.

Oologists: The editor of this paper desires to exchange with you. Send list of what you have stating what you want enclosing stamp for reply.

Books Received.

All books reviewed in these columns can be obtained from the Editor of this paper.

The December *Arena*, Vol. 1, No. 1, edited by B. O. Flower, published by The Arena Publishing Co., Boston, Mass., at 50 cents a number, $5.00 a year, is before us. Its frontispiece is a fine engraving of Rev. Minot J. Savage, who also contributes an interesting article on "Agencies that are Working a Revolution in Theology." Papers from the pens of a dozen noted men and women make this, the initial issue, an exceedingly entertaining magazine. Among the many articles for January, we note "God in the Constitution," by Col. Robt. G. Ingersoll; "The Fallacy of License," by Henry George, etc.

Kansas City as a Game Market.

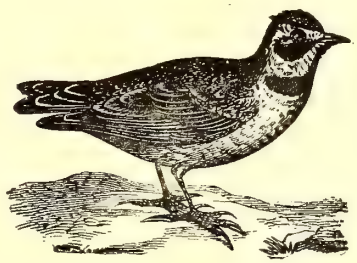
There is no line of business in Kansas City that has made strides to the front within the past few years, so rapidly as the game business.

A few years ago Kansas City was a poor market for game, with a poorer reputation. To-day it will hold its own with any city, and its reputation is excellent. This state of affairs is due to the push and energy of our commission merchants; and more particularly to those men who make a specialty of game. Our prices are comparatively better than those of other points and the shippers invariably realize more money from consignments to this market than else where. This is no empty assertion, for while Chicago, New York, St. Louis and other points are flooding the game country with circulars asking consignments, and offering all kinds of inducements, Kansas City merchants continue on "the even tenor of their way," receiving a large per cent of all game shipped. In many cases we receive consignments from the legitimate territory of some of the above named cities, and it is rarely the case that territory tributary to Kansas City is invaded from other points.

When a shipper from our territory consignes his stock to other points than Kansas City, he invarably finds it to his interest to return to this market. Why is this? simply because we have a market surpassed by none and equaled by few.

In order to post ourselves more thoroughly on the situation, we called on Messrs Richard Butler & Co., of 413 Walnut street, our most enterprising game men, and found that their receipts for the month of November alone were 75 carcasses and 188 saddles of venison, amounting to 16,000 lbs, besides over 900 packages of miscellaneous game, including bear meat. This is a great deal of game, but Mr. Butler assures us that had he received twice as much, they could have disposed of it to advantage,

Other houses, while not doing so extensive a business as Messrs Butler & Co., report the same state of affairs. Our game market is growing, and will continue to grow so long as the demand exceeds the supply, and shippers realize greater returns from consignments to this city than elsewhere.



Otocoris Alpestris.

The bird illustrated above is known in different localities under the name of Shore or Horned Lark also Sky Lark. To the sportsman this winter visitant offers a toothsome morsel, and as they haunt the open spaces much skill is required in order to get a good shot. But the epicure demands it for the table and the hunter braves the wintry blasts, contenting himself with the pro pect of an early sale at a good price. As there are a number of varieties of Horned Lark and as the summer and winter plumage is unlike, much uncertainty exists among experts and Wilson qualifies some statements with a (?).

Their song is low but melodious and when suddenly alarmed the bird darts off uttering a series of shrill chirps. The plumage is a pinkish brown with yellow tints, a broad band of black across the crown with a crescent shaded patch from the bill below the eye and along the side of the head; the tail feathers black. In summer the yellow tints disappear, leaving a white band with brownish ash. They breed in Newfoundland and Labrador. Cases are also given of the nest and eggs being found in northern U. S. The eggs, four or five in number, are marked with bluish and brown spots.—*E. T. K.*

Birds of this Vicinity.

This section of Missouri present many natural features conducive to the well being of bird life. The heavily wooded parts affording both shelter and an abundance of suitable food. We give below a list of birds found here during the winter, hence known as permanent or winter residents.

129. *Merganser americanus* (CASS.).
American Merganser.
172. *Branta canadensis* (LINN.).
Canada Goose.
289. *Colinus virginianus* (LINN.).
Bob-white.
300. *Bonasa umbellus* (LINN.).
Ruffed Grouse or Pheasant.
305. *Tympanuchus americanus* (REICH.).
Prairie Chicken.
310. *Meleagris gallopava* LINN.
Wild Turkey.
337. *Buteo borealis* (GMEL.).
Red-tailed Hawk.
349. *Aquila chrysaetos* (LINN.).
Golden Eagle.
365. *Strix pratincola* BONAP.
American Barn Owl.
366. *Asio wilsonianus* (LESS.).
American Long-eared Owl.
373. *Megascops asio* (LINN.).
Screech Owl.
375. *Bubo virginianus* (GMEL.),
Great Horned Owl.
379. *Glaucidium gnoma* WAGL.
Pygmy Owl.
406. *Melanerpes erythrocephalus*(LINN.).
Red-headed Woodpecker.
409. *M. carolinus* (LINN.).
Red-bellied Woodpecker.
412. *Colaptes auratus* (LINN.).
Flicker.
474. *Otocoris alpestris* (LINN.),
Shore Lark.
477. *Cyanocitta cristata* (LINN.).
Blue Jay.
488. *Corvus americanus* AUD.
American Crow.
514. *Coccothraustes vespertina* (COOP.).
Evening Grosbeak.
521. *Loxia curvirostra minor* (BREHM).
American Crossbill.
534. *Plectrophenax nivalis* (LINN.).
Snow Bunting.
593. *Cardinalis cardinalis* (LINN.).
Cardinal.
618. *Ampelis garrulus* LINN.
Bohemian Waxwing.
Passer domesticus.
English Sparrow.
722. *Troglodytes hiemalis* VIEILL.
Winter Wren.
731. *Parus bicolor* LINN.
Titmouse.
766. *Sialia sialia* (LINN.).
Bluebird.

—*E. T. K.*

Jasperized Wood.

Fine specimens of Jasperized Wood from Arizona, are now on sale in this city, in large or small quantities, in any color or combination of colors. Also pieces showing Amethyst Crystals or Polished. For particulars address:

DAVID H. TODD,
care of THE NATURALIST.

Clippings.

Chestnut Burrs, like milliners, have Fall openings.

Navasso, the guano island, seems to be in bad odor just at this time.

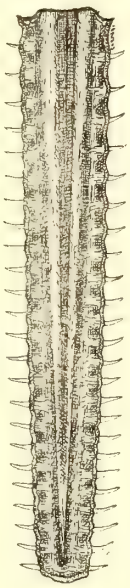
The monkey goes to the sunny side of the tree when he wants a warmer climb.

PREMIUMS.

Do not mutilate this paper but order by number.

THE NATURALIST offers the following articles as inducements to new subscriptions:

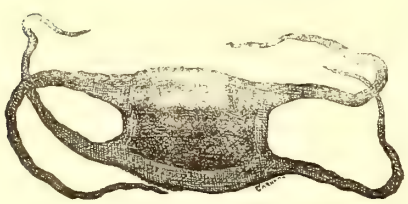
We will mail all of Vol. IV. of THE NATURALIST for 50 cts., including your choice of any of the following interesting specimens, or the specimens will be sent separately for 30 cts., postage and packing, however, extra in either case.



No. 1. SAW OF THE SAW-FISH.

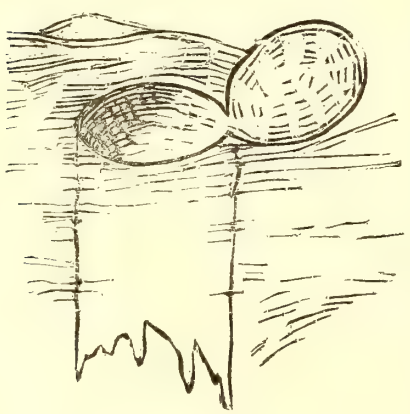
An interesting specimen, being an extension of the nasal bones of *Pristis antiquorum*. Those offered by us are fine; from 6 to 8½ inches long. Postage etc, 4cts.

No. 2. A Fine BARNACLE from the Atlantic, A SHARK'S EGG and an



egg of the Skate. Post, etc. 5 cts.

No. 3 A fine egg of the HammerheadShark,, *Zygœnra malleus*, from the Pacific Ocean and a Sea Urchin, commonly called Sand Dollar. Postage 3 cts.



No. 4. Nest of the Trap Door Spider, being the home of the large and ugly *Mygale hentzii*, from Lower California. A valuable addition to every collection. Postage and packing 5 cts.

No. 5. Ivory Apple. This is a fine large specimen of a species of Vegetable Ivory, found in the South Sea Islands. It gets its name from a close resemblance to a petrified apple. Postage and packing 5 cts.

No. 6. Two fine specimens of Resurrection Plant, from Mexico. This plant looks like a bunch of dead roots, yet, when placed in water, it swells up and spreads out its arms into a lovely patch of green moss, several times its original size. One plant, post-paid 15 cents.

No. 7

Modern Indian Pottery.

Made by the Indians of Arizona. Vases, Urns, Pitchers, Saucers, etc. All perfect. Our own selection, post-paid.

*No. 8. Manton's Hand Book of Field Botany. Postage etc. 20 cts.

*No. 9. Manton's Insects, How to Catch and How to Prepare them for the Cabinet. Postage etc. 20 cts.

*No. 10. Taxidermy Without a Teacher. Postage etc. 20 cts.

*No. 11. Beginnings with the Microscope. Postage etc. 20 cts.

*The above manuals are all cloth bound and profusely illustrated.

No. 12. Natural History Plays, Dialogues, etc. Postage etc. 3 cts.

No. 13. Sea Fan, being *Eorgonia flabellum* of the Flexible Coral family, fan shape, of a rich yellow color. Also a fine specimen of Red Coral, *Corallium rubrum*, Postage, packing, etc. 5 cts.

No. 14. Pink Coral from Singapore. An exquisite specimen suitable for every cabinet. Postage and packing 5 cts.

No. 15. Book of Data Blanks, bound in b'ds, check book form, suitable for the pocket, containing 100 datas with stub, perforated so that datas can be torn from stub. Postage 3c.

No. 16. Hooper's Glass Eyes. An assortment of eyes, both black and colored, from 0 to 17. Postage 4 cts.

No. 17. Oologist's Outfit. One good, white metal, blow pipe; one Stubb's Steel drill for fresh eggs; set of trays. Postage etc. 6 cts.

No. 18. Assortment Oologist's Trays. Our trays are the strongest on the market, being made expressly by our order. The corners are strengthened with a strong manilla wrapper, the whole being covered with a dark, non-soiling, olive green wrapper. They are uniformly ¾ of an inch deep.

18 trays 2x1½ worth 25c. 12 trays 3x2 worth 20c
6 " 4x3 " 15c. 4 " 6x4 " 10c
3 " 8x6 " 8c. Packed, by express, for 10cts. extra. Think of it, 78cts. worth of trays with the Naturalist for only 60 cts., or the trays alone for 40 cts.

No. 19. An assortment of 100 Insect Pins; Six sheets Cork, 3½x12x⅛ inches. Postage and packing 5 cts.

No. 20. Entomologist's Outfit. One Setting Block, 5½ inches long, flat or beveled top, wide or narrow slot, with 100 assorted Insect Pins. Postage and packing 5 cts.

No. 21. Tidings from Nature, 130 pages of this excellent little magazine, cloth bound, formerly published by H. M. Downs, of Rutland, Vt. Postage etc. 5 cts.

22. West American Scientist. 12 continuous numbers of this interesting journal, formerly published at $1.00. Postage etc. 6 cts.

23. The Oologist, 13 continuous numbers of Lattin's Oologist, published at 50 cts. Postage 2 cts.

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The Naturalist.

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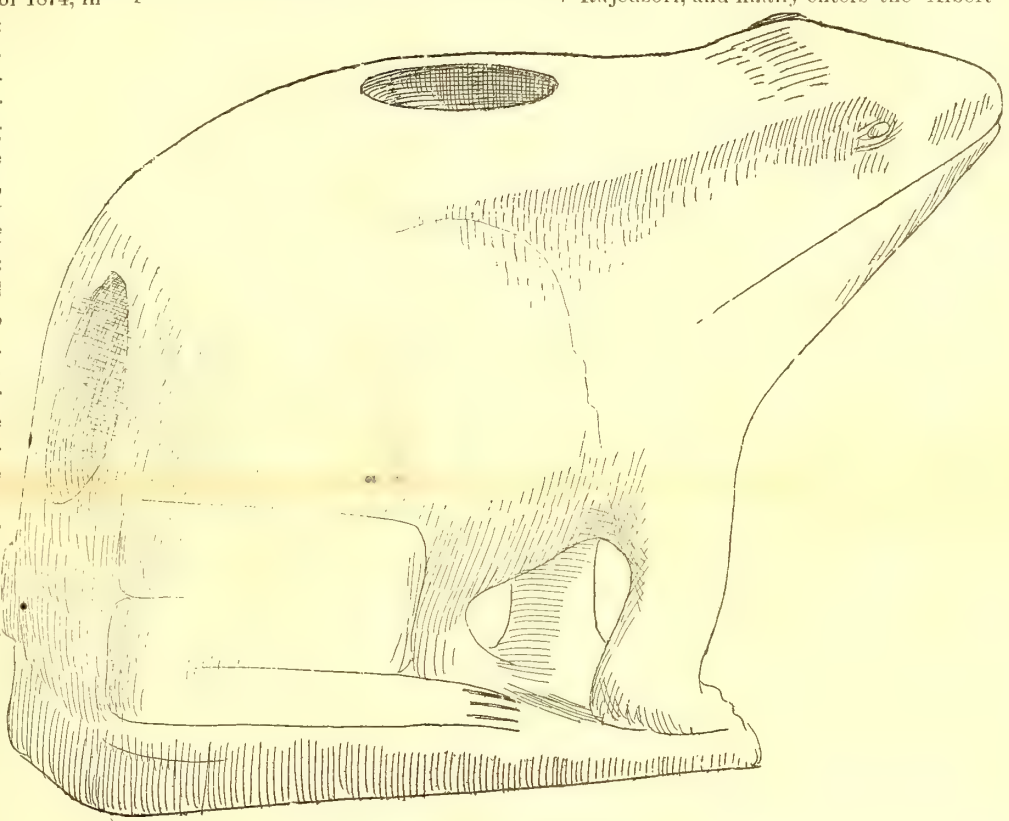
Ancient Stone Pipe.

The subject of our illustration is a stone pipe, found by Mrs. Margaret Rogers, on her farm in Fountain county, Indiana, one mile from Covington, and now in the possession of Mr. E. Butts, assistant City Engineer of Kansas City, Mo., the best posted Archæologist in the city and to him we are indebted for the illustration. The following description is taken from the Geological Survey of Indiana for 1874, in which the pipe was also figured:



This pipe is carved out of a hard, coarse grained, gray colored, trap rock. It is a fair representation of a bull frog and with the exception of one or two physiological omissions, would do no discredit to many a modern pretender in the art of carving. The figure is full size: Five and a half inches long and four inches high. The bowl, which is situated on the back, is one and one eighth inches in diameter; the greatest diameter of the stem hole is one and one quarter inches, and tapers rapidly to its connection with the bowl. It slopes upward at an angle nearly corresponding to that of the back of the frog and forms a slightly obtuse angle with the bowl. In order to smoke such a pipe with ease it should either be held above the level of the mouth or the stem should be crooked to suit the lower position. The excellent finish and high degree of art displayed in carving so perfect an image of a frog from hard stone might at first lead one to question its authenticity as a relic of pre-historic times, but when it is compared with other pipes which belong *undoubtedly* to the mound builders or stone age, there is little room to dispute its claim of antiquity. In all the stemless mound builders' pipes which I have seen, the bowl and stem holes are nearly equal in size at their openings; the latter opening tapers rapidly and is small where it connects with the base of the bowl and forms with it a slightly obtuse angle.

The frog is sitting upon his hind legs which are admirably folded, but the artist exhibits carelessness in minor details by only giving four instead of five toes to the hind feet and three instead of four toes to the fore feet. The attitude is quite natural and the head and body are in good proportion.

The dignity of labor is all right, but it is the dig night and day of labor, of which many people complain.—*Ex.*

Stanley's Latest Discoveries.

Since the latter part of the year 1887, when the explorer left Stanley Falls on the Upper Congo, the news from him has been very meagre, and that which did come was anything but hopeful, especially when taken in connection with the reports that Emin's settlement had been broken up and Emin himself was a prisoner in the hands of the Mahdi. The country in which Stanley's route lay is a table-land of some five thousand feet elevation, directly under the equator, with many mountain ridges and snow capped peaks, much of the surface heavily wooded, and having a vegetation so prolific as to be almost impenetrable, while it has a very considerable population, mostly of small savage tribes, always engaged in war and slave stealing. In a region of this character, about one thousmiles each way in extent, Stanley has been marching and countermarching for nearly two years, first in the interests of commerce and for purposes of exploration, and finally as the successful recsuer and deliverer of Emin Pasha from the Mahdi. The additions made by the explorer to our knowledge of the geography of this vast region in Central Africa are necessarily limited by the meagreness of the accounts so far received, but it is seen that it will be of great importance. Heretofore the Albert Nyanza has been considered the source of the southwest branch of the White Nile, the Victoria Nyanza being the source of the southeast branch. Stanley, however, has discovered an extension of the Southern Nyanza, or Nyanza of Usongora, which, he says, "is called now Albert Edward Nyanza, and is about nine hundred feet higher than Albert Nyanza, having an exit at Semliki, which receives over fifty streams from the snowy range of the Rujeuzori, and finally enters the Albert Nyanza, making the Albert Edward the source of the southwest branch of the White Nile." The area of the extension is said to be 26,900 square miles.—*Scientific American.*

Chronic Howlers.

The Brazilian *Mycetes*, or Red Howler, defends itself by means of its appalling voice. At the mere sight of a Jaguar a Mycetes assembly will set up a general whoop, raising their voices to a deafening uproar, till the enemy retreats. Some of the old Howlers are then apt to pursue h for a quarter of a mile, breaking out into fresh execrations whenever they catch sight of his speckled hide. It takes hours to calm their excitement, and in moonlight, when every bush seems to hide a lurking foe, they often make a night of it, and keep up a far sounding roar, renewed at the rustling of a twig.—Ex.

The Anterior Arts.

By "Ictinus."

[Continued.]

In the middle ages there were seven liberal arts, but to-day some of those liberal arts are regarded as sciences. Art is now known to us as Music, Architecture, Sculpture and Painting; and they are placed in this order because it is convenient and rational. Men uttered sounds before they could build houses, built before carving them, and carved before painting them; for only a sharp flint was needed to carve sandstone, but to extract colors from minerals and vegetables and apply them where the best artistic effect could be obtained, required a knowledge of chemistry as well as a cultivated artistic instinct. Poetry and Pantomime are closely related to Music. These four arts are brothers; the first two, Music and Architecture are twins, for they do not obtain their origin from an imitation of natural objects.

Man is endowed with certain artistic instincts, which, to be gratified express themselves in a manner prompted by certain instincts of the soul. It soon becomes apparent to him that signs and language alone could not express all his thoughts; then he learned to impress his fellows by giving his voice certain accents, inflections a rhythm to express his ideas more forcibly. From the art of tones to melody the road is short, and Music is born.

Architecture, the second art of antiquity was born of the same artistic instinct. To build a hut with the branches of trees is not art, but the fulfilment of a natural need. But to excavate a tomb in a sandstone hill, to divide the vaults into chambers of various sizes; cautiously to leave pillars to support its stony roof, to give a greater bearing surface to the caps of these pillars to prevent the load resting on isolated points of support; then to carve the walls and pillars with signs, destined to preserve the memory of a victory over an enemy; this is art.

Music and Architecture are the only arts in which primative man developed certain creative faculties, in his desire to publish his ideas, to preserve his memory or share his hopes; by associating with them a sound or a form. Sculpture and painting are to Architecture what Pantomime and Po try are to Music; derivatives, natural consequences.

A man, more powerful than his neighbors, has killed a tiger. He hangs its skin before the entrance to the cave in which he lives. The skin is decomposed by the elements; he carves in the stone, as well as he can, something which looks like a tiger; so that his neighbors and his children may retain forever, the memory of his courage and skill. But he wants this sign to be seen from afar and command attention. He has observed that red is the most brilliant of all the colors; so he daubs his sculptured tiger with red. By all this is meant, that a tiger invaded the home of a man, who was so brave that he killed the tiger and thus defended his property at the peril of his own life. This, again, is art. It exists here complete and nothing remains but to perfect the manner of execution. As the years roll on, our primative hero dies; his children cut in the rock, a tomb, in which to deposit his remains, and on the outside they carve a man wrestling in deadly combat with a tiger. The figure of the man must be large, that of the tiger small; for the family of the deceased wish that passers by should know that their father was a brave and powerful man. Certainly a little man who kills a big tiger is more courageous than a big man who kills a little tiger; but this is too complex an idea to enter into the mind of the primitive artist. In all the antique sculptured remains of Egypt, India and most other countries, the conqueror is represented as collossal, while his enimies, whom he defeats, are small.

In the vestibule of St. Peter'sCathedral at Rome, is a magnificent statue, the work of Bernini; it is the equestrian statue of Constantine; a man who hung his father-in-law, strangled his brother-in-law, butchered his nephew, decapitated his oldest son and drowned his wife while she was taking a bath; who gave up to wild beasts the Frankish chiefs whom he conquered on the banks of the Rhine; and finally ended his career by destroying the last remains of antique Rome, never to rise again. Now the red tiger carved at the door of the barbarian, or the combat represented on his tomb, is more in conformity with the true fundamental principals of art than this statue of the Emperor Constantine, set up in a Christian church. The image of the tiger may be a shapeless thing, the statue of the Emperor an excellent work; this, however, does not affect the question, for mechanical execution is foreign to the essential principles of art. But when an intelligent people, possessing the essential principals, adds a taste for the beautiful and the power of expressing it in color and form, we may properly consider them an artistic people. Such a people once lived in Southern Europe, yet, in a political point of view, they may be considered as one of the most weak and unstable of nations; to us their political and religious institutions seem barbarous. They were treacherous; the people of one state were envious of those of another; their leaders were often corrupt and murderous; they were ignorant of the power of electricity, the power of steam and many other great inventions which have characterized the Nineteenth Century, an era of progress. But we must confess, their poets, their architects and their sculptors of Athens remain superior to all that the most civilized ages have been able to produce. The Greek's idea of anatomy was very incomplete as compared with ours. History does not inform us that they had any anatomical schools; and, if they had they must certainly have been on a scale inferior to our own. Yet,Greek statuary is, and always has been, universally admitted to be superior to that of any other age. We know more about the structure of the human body than did those people of the age of Pericles. Yet we cannot carve as they carved. The administrative power of our civilization is undoubtedly more adequate to our needs, and better organized for our purposes, than that which directed the governmental affairs of the immature civilization of the Greek states. Yet the writings of Heriod and Homer excel any of the best authors of our age, and the Parthenon remains "the most perfect building." Thus it cannot be conceded that there is any vital relation between art and civilization.

If it is the nature and not the degree of civilization that produces works of art, we must conclude no longer to confound the advance of civilization or the industrial arts with the advance of the fine arts; we must judge of the latter without regard to the social state of the people among whom they may be developed; and should not infer, that because one nation is lower in the social scale than another, its arts are inferior to those of the other nation. We should not be blinded by narrow prejudices in judging the arts of any anterior period, but remember that those arts, however obscure, may in all respects be more expressive than those which we are accustomed to regard with true adoration.

One who devotes himself to the study of the arts of any period of social barbarism is no more open to censure for cherishing a desire to retrograde towards such barbarism,than one who seeks for instruction among the arts of any other anterior period, for no one will contend that our civilization is not better than the civilizations of antiquity, of the Middle Ages, or of the last three centuries.

It would seem that the arts either accompany the material progress of civilization, and that they have, therefore, reached the moment of their greatest perfection, as our civilization is superior to all of the past and we must consider as relatively barbarous all anterior arts; or, the arts are entirely independent of the moral and material state of civilization, and, that the only guide to preference of one expression of art over another is each man's personal taste or caprice. But both conclusions are false. To acquire a correct idea of the relative value of the anterior arts, we must judge them from certain laws; laws peculiar to those arts and wholly independent of the social state in the midst of which they have been developed.

A hen is conscientious—her chief object in life is to fill the bill.—*Ex.*

Palæontological Discoveries In and Near Kansas City, Mo.

By David H. Todd.

[Continued.]

Having left, in our former article, the Crinoid, we now come to the MOLLUSCA: Polyzoa.

Our rocks here teach that the different families of the Polyzoa grew abundantly, leaving many beautiful imprints of their fine and delicate net work for our study. The student will find this very interesting and profitable. Some of the species are so delicate in structure that the aid of a magnifying glass is needed to show the beauty of the poriferous and minute projecting points. The exact identification of the different species will require much study, and be found very entertaining. Of this family, and noticable in our rocks, is the *Fenestella*, represented by several species. The most common is *F. shumardi.* Two species of the *Polypora* are found but not in abundance, and classed among the rare forms of fossils. Also *synocladia.* We now pass to the Brachiopoda. This division of our study is quite extensive and presents a large number of interesting Genera and species; one of the rarest forms being the *Lingula.* The most prolific and abundant are the *Athyris* and several forms or species of the *Productus.* Of which we find some seven or eight species. They will be recognized by the little nodes on the shell where the spines grow, indicating that they were well protected, if the spines were of value as a means of defense; also having two valves, the dorsal valve being flattened, the upper, ventral valve, rounded or raised surface, connected by what is called a hinge. Some of the common forms of *Productus* were very prolific, as is shown by our rocks. There is scarcely any of our rocks, from the highest to the lowest, but you will find in it some, if not all of the species of *P. nebrascensis*, *P. longispinus* or *P. semireticulatus*, while *Productus punctatus* and *P. corra* being the largest and finest, are found sparingly, though in our Oolite and white limestone, some beautiful examples of these two genera have been obtained. *Productus prattenianus*, *P. costatus* and *P. pertenuis* are seldom met with. *Chonetes*, *Orthis. Hemipronetes*, *Meekella*, *Syntrilasma*, *Retzia*, *Spirifer cameratus*, *S. martinia*, and *Sperifcrina kentuckensis*, and *Terebratula bovidens* are all found in more or less degree of abundance. The genus and family of the *Lamellibranchiata* is the largest and presents the greatest number of species of any belonging to our rocks. The specimens obtained from the Oolite are by far the finest. In many instances they are so perfect as to look like a recent shell. However, of late years the best localities have been exhausted, and but few are to be had.

In these wonderful productive families we find *Lima*, *Entolium*, several species of *Avictulopecten*, *Aviculopinna*, *Pinna Avicula. Pseudomonotis*, *Myalina*: some three or four species of *Nucula*, *Miculana*, *Macrodon*, *Schizodus*, *Pleurophorus*, *Edmondia;* several species of *Allorisma*, *Prothyris*, and *Lolenopsis.* The Gasteropoda of the fossils represented in this group are much sought after by collectors, owing to their interesting and striking effect in any collection. The *Pleutomaria* is represented by the largest number of species. Of this family of spiral shells. Some handsome specimens are obtained, while never found in abundance. The collector is often rewarded by finding one or the other of these beautiful shells; *Dentalium*, *Euomphalus*, *Bellerophon.* Several species of the most common forms are *B. percarinatus*, and *B. corassus*, *Platyceras*, *Macrochulus*, *Aclis.* The *Murchisonia* are obtained sparingly, though in most cases in the blue shale or first rock overlying the blue shale along the bluff.

We now come to the Cephalopoda, the highest order of the MOLLUSCA, and are known as the *Orthoceras*, *Nautilus* and *Goniotites.* They will be recognized by the chambers or cells which are divided into regular spaces and are highly prized by collectors everywhere. But few fields, if any, present as large a variety of species as are found here. Of the *Nautilus* some thirteen or fourteen species have been obtained and three species of *Goniatites.* The largest of the *Nautilus* is the *ponderosus;* measuring eighteen(18)inches in diameter. Rev. Dr. Bennett, of Kansas City, Kas. has two noble examples of this species. However, some doubt seems to exist in the minds of Palæontologists, and Dr. White in Hayden's "Geological Survey of Nebraska," says that this shell seems to be nearly related to *Nautilus tuberosus* of McCoy, as figured in his "British Palæzoic Fossils." Prof. Mc Chesney also describes his large type specimens as *N. illinoisensis* from La-Salle, Illinois. However, from the number of specimens found here we will be able to settle the matter definately in some of our future state Reports. Missouri having just emerged from her long slumber, and appointed a Geological Survey of whom much will be looked for, especially in the direction of naming and classifying our fossils.

We now come to the very interesting and highly coveted fossils under the ARTICULATA: Crustacea, embracing the different divisions in the Palæzoic Crustacea, however we do not posess as large a number as are found in other places, but what we do find are very interesting and in a good condition. The *Phillipsia major*, commonly called *Trilobite* is found quite frequently, especially in some of our Oolite and blue limestone. However, perfect specimens are very rare; while the finding of the head and pygidium separated is quite common in the same rock. The head or frontal is oval, with two spines running back to the pygidium. The pygidium has what is called three lobes, arched and gradually tapering to the end. The *Trilobite* is a very interesting fossil, and when found whole, is considered a great prize, always commanding good exchanges for other rare fossils. They are obtained straight, partly rolled, or completely like a ball. Of the Fishes, we have abundant evidence that they shared a portion of our waters. Quite a number of teeth are to be had in the Oolite. Of those obtained are *Xystrodus*, *Deltodus*, *Chomatodus*, *Peripristis*, *Petalodus Diplodus*, *Cladodus* and others. Coal Measure insects of this locality as well as others, are extremely rare. The only indication we have here of these is in the blue shale, of which only two representations have been discovered. Both were obtained by Mr. Hare, and sent to Mr. R. D. Lacoe, of Pittston, Pa., who has made a specialty of Coal Measure Insects, and has left nothing undone, spending time and money in getting everything obtainable in this direction. The shale of this locality should be closely watched that nothing shall be lost. Also where fossil plants are found, as the two are generally found associated together.

Power of Vision in Vespidæ.

By Samuel H. Scudder.

One day in the middle of July, while confined by illness to my tent on the summit of the Roan Mountains, Col., I was able to watch at leisure the operations of a couple of wasps which had entered the tent and were searching for flies along the tent roof. The tent was an ordinary wall tent, 10 ft. x 12 ft., where, lying upon his back, the observer might readily follow all the movements of these creatures. There were also in the tent perhaps a dozen or twenty flies, mostly collected near the ridge pole, especially, when not in flight, alighting upon a rope which stretched from one of the upright poles supporting the tent to the other, just below the ridge pole. The wasps were in incessant motion, and in the course of one morning were seen to capture only three or four flies, the flies being usually able to dodge them whenever an attack upon them was made, I was unable to see that a wasp accelerated its motion in the least when approaching the flies or directed its flight immediately upon them until within two or three inches of its intended victim: and as it often passed one at no greater distance than this without any attempt at capture, the impression was strong that the wasp's distinct vision while in flight did not exceed this distance. But what was most surprising was the great number of mistakes made by the wasps. Every slight stain or defect in the canvas or minute shadow upon it was repeatedly attacked by the wasps as if they supposed it to be a suitable object for food. There seemed to be no power

on their part of distinguishing between a spot of color upon the canvas, having no elevation whatever, and an object or body resting upon it. Several times the shadow made by a fly alighted upon the outside of the tent was pounced upon by the wasps on the inside, and such objects, mere shadows or stains, were repeatedly attacked by the same wasp over and over again, often with only half a minute's interval or even less than that. I cannot now recollect exactly the estimate I made at the time (but failed to record) of the relative number of attacks upon false objects to those upon proper victims, but I am under the impression that the mistakes were to the correct judgements as twenty or thirty to one. My observations were continued for two or three hours and repeated on subsequent days for briefer times, always with an identical result. These observations seem to be entirely in keeping with the forced experiments of Professor Plateau upon the vision of wasps, and lead to the conclusion formulated by him that the vision of these insects, even when in flight, is exceedingly defective, judged by our own standards.—*Psyche.*

Zoological Gardens.

There is no subject in which human interest is more indestructible than the life of wild animals. The reading public never tires of the works of new sportsmen and naturalists. A writer who, like Gilbert White, joins a talent for observation of wild animal life to an exquisite gift of literary expression, is sure of permanent fame. The more highly civilized does man become the stronger is his interest in free and savage life. The frontiersman is rather the natural enemy of wild life; his instinct is to exterminate it. But the instinct of the civilized man is to enjoy and protect it. A writer in the *American Naturalist* has complained of the unreasoning imitation which has characterized the care of wild animals. He does not see why bears should be kept in pits. They were first so kept in the Jardin des Plantes, in Paris, although the savant who originated the idea died without having informed the world of the ground of it. Ever since, bears have been kept in pits. Bears, he tells us, should be persuaded to hibernate; they do not do so, because they do not recognize their conventional quarters as proper places of retirement. The same writer asserts that nearly all captive animals are half blind and have stiff backs, and that their unwholesome life is the reason of their not breeding. A writer in the new *Quarterly Review* gives some interesting facts with regard to the feeding of animals in the London gardens. The hippopotamus requires some two hundred pounds of food a day, while the elephant, a larger animal, needs only one hundred and fifty pounds. Lions and tigers get about eight or nine pounds of meat, usually horse flesh. Nevertheless, when in their open-air spaces, although quite oblivious of people, they eye wistfully the deer and other animals, their natural food, they see at a distance. We are not informed that the animals now have anything besides water to drink. In Paris, formerly, spirits were given the elephants to excite them to special exertions. If this sort of support were given the animals the flying fox would be a proper subject for such experiment, and might serve the public as a "horrible example." It is asserted on high authority in the "Guide to the Calcutta Zoological Gardens" that in India "the flying foxes often pass the night drinking the toddy from the earthen pots into which the tapped juice of the date tree runs, the result being that they either return home in the early morning in a state of riotous intoxication or they are found lying at the foot of the trees sleeping off the effects of the midnight debauch." The *Quarterly* reviewer tells us that out of deference to the Society for the Prevention of Cruelty to Animals the London public is not allowed to witness the feeding of the snakes. As is well known, many of these snakes will not live if deprived of their natural food. Accordingly, live rats, mice, birds and frogs are fed them. We believe that on the Continent no objection is made to the admission of the public at this time. Upon the subject of the well-being of the captive animals, there is another view to that expressed by the critic in the *American Naturalist.* It is even a question whether, with the improved methods of treatment, animals cannot be made happier in confinement than in a natural state. There is reason to believe that their natural state may not be a very happy one. An English sportsman, who long practiced shooting from a *machan*, which is a platform built in a tree, and who thus had, while the beaters were miles away driving up the game, ample opportunity to study from this position the habits of animal life about him, has left some curious testimony on this point. All animated nature appeared to him to be in a continual state of fear and watchfulness. The passing butterfly was caught by a bird, and the bird by a snake.

The deer listened for every sound of danger. Even the tiger or the bear, as it came along, always looked suspiciously at every bush or shadow. There seemed to be a general reign of terror. These veiws, it will be observed, are very unlike the recently expressed ideas of Mr. Wallace. Frank Buckland had also something to say on this point. He thought that the animals were happier in the gardens than they would have been in their native homes, and that they lived longer. It was his belief that the Vasa parrot presented to the London "Zoo" in 1830, and which, we understand, is still alive, is probably the oldest bird of its species in existance.—*New York Times.*

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KANSAS CITY, JANUARY, 1890.

SUBSCRIBERS and advertisers will receive promt attention, especially subscribers. Subscribers who do not receive their papers promptly should notify us at once.

OUR modesty is not so great but what we can rise and boldly cast our ballot for Chicago as the most desirable city for the World's Fair in 1892. "And so mote it be."

Wanted: 100 copies of October NATURALIST (No. 3, Vol. IV). Will pay five cents each or date your subscription ahead two numbers. Addres,
Editor NATURALIST.

C. M. GRIFFITH, pastor of the M. E. church Niobrara, Neb., solicits specimens for the Cabinet and Museum of the Nebraska Wesleyan University. All donations should have charges prepaid.

IT is reported that Jacob Pfecht, of the Erie Motor Car Co., of Erie, Penn., has invented Personal Insulation, and that by its use a currant of any number of volts can be received without injury. This will enable electricians and linemen to handle any wire with safety. The invention is a secret which Mr. Pfecht will have patented.

NOBLE M. EBERHART, Ph. D., Sc. D., F. S. Sc. (London), President of the Chicago College of Science is probably hunting bugs ere this in Valling, Florida. He writes that very likely he will visit Cuba before returning to the Garden City.

WHEN sending fifty cents for a subscription, if you desire a premium, please specify what number and enclose necessary postage. Additional premiums can be had at thirty cents each, plus the the postage, which is always mentioned. When fifty cents is sent and no premium selected, we take it that the subscriber considers THE NATURALIST worth fully that sum, without a premium. Quite a number of such subscriptions have already been received, for which accept our sincere thanks.

SEVERAL articles are being prepared for THE NATURALIST by prominent members of the Academy, and others entirely independant of any paper that may be read before that body. The following titles will probably be chosen for some of them:

A Description (Illustrated) of the Fossil Sponges of this Vicinity.

A List (Illustrated) of the Fossil Shells found in Kansas City.

A Treatise (Illustrated) on Ornithology and the Various Processes of Taxidermy, including Embalming. Also, On a Fern, Posessing all the Peculiarities of a Reserection Plant (Illustrated).

LAST month we announced the arrival of three Snowy Owls (*Nyctea nyctea*). Since then three others have been received on the market and all secured by Mr. Dixon. A letter from Parsons, Kansas, also speaks of one being shot at that place. During a period of fifteen years, at Sandwich, Illinois, the writer only remembers hearing of one White Owl, which was not shot, yet, while at Valparaiso, Ind., only a hundred miles farther east, he saw and secured more than thirteen fine specimens during the three winters he remained in that city, and Mr. Parker, the taxidermist of Abilene, Kansas, writes, "I killed a pair of fine specimens of Snowy Owls yesterday, and know where there is three more, which I will probably get today."

AND now comes Vice-President of the American Association for the Advancement of Science, Col. Garrett Mallerby, with an article written for that association, entitled "Israelite and Indian, a Paralell in Planes of Culture," which completely demolishes all previous and popular theories that the American Savage had a formulated and established religious faith, beleiving in a single supreme being, and a system of rewards and punishments after death, prior to the contact with civilization. The Colonel is also connected with the Smithsonian and is recognized as authority on Indian tradition, religion and languages. This contribution to science is likely to cause no little stir in geological circles. We hope to review the paper at length in our next issue.

WE especially call your attention to premium No. 1., which will place wholesale prices at your disposal. We quote the following from a circular issued by the Exchange: "The design of the National Book Exchange is that of a large Book and Merchandise Emporium, through which its members may order anything in the line of Books, Music, Music Books, Periodicals, Jewelry, Silverware and Job Printing, in any quantity, at lowest wholesale price." "To build up an institution that proves of inestimable value to the masses, surely deserves the kindly favor and patronage of every intelligent citizen." The Exchange was established in 1887. The following is an extract from a letter received from member No. 6542:

Huntington, Ind. Sept. 3, 1888.
To the buyer of scientific books, which are comparatively high priced, a membership in the National Book Exchange, is especially valuable. It has been a saving of 25 to 50 per cent to me, on the books I have purchased. Hugh C. Rothert.

The book catalogue is an 8vo in size and contains 104 pages, giving wholesale and retail prices of many thousands of books under the following heads: History, Biography, Fiction and general Literature, Poets and Poetry, Reference and Miscellaneous, SCIENTIFIC AND EDUCATIONAL, Special Selections, etc.

ARE you a subscriber to the NATURALIST? "No!" Why not? "Well, I'll tell you, neighbor, I've subscribed for dozens of similar papers that have started with glorious prospects, and after receiving a number or two have either never received any more or, where the publisher pretended to or, tried to be honest, have received some second rate paper in lieu of the defunct organ, until I've about sworn off subscribing for *anything*."

The above seems to be the prevailing reason why many decline supporting even a "worthy cause." The editor of THE NATURALIST regrets that such occurances are only too numerous, yet such an excuse should not be laid up against this paper, as not only have none of the NATURALIST'S subscribers ever been the losers, but all who may subscribe, can always feel certain of getting more than value received. Last month we sent out more than 1000 sample copies, principally to Geologists, and it is gratifying to note that every one does not fear to lose his little half dollar. For this issue we announced to advertisers 500 extras but presume they will not obj ct to appearing in 1000 extras, which is the way we aim to treat our patrons, whether they be advertisers or subscribers. We hope that "a word to the wise" will prove sufficient, and that we may soon have the pleasure of enrolling *your* name in our subscription book. THE NATURALIST, in its Presentation of Popular Natural History, Science and Art, aims to create a desire for a more wholesome class of reading that shall counteract the many evils caused by the scattering broad-cast of the cheap and trashy literature that, we regret to say, is constantly becoming more abundant. Scarce a day passes but what the Press announces some youth or maiden led astray, resulting mainly from reading this pernicious class of literature. We should be glad to send THE NATURALIST to every home in the land, and help as much as is in our power to lead the young toward a higher, better and nobler life. THE NATURALIST should also be in the hands of every teacher, who may aid us materially in its introduction, as besides containing much that could be used to advantage in the school room, the teacher will find in THE NATURALIST many articles that cannot fail to be of especial interest to himself. The publishers having had years of experience in the book business, have arranged to supply all subscribers (for an additional 55 cents. See premium No. 1.) with a membership to the National Book Exchange, which will make it possible for you to surround yourself and family with the very best literature obtainable, all at the lowest wholesale prices. A school reading room can be established and supplied with the best periodicals at publishers lowest club rates. Nothing can ever be accomplished without an effort. We want you to demonstrate the truth of our remarks. We know it will be money in your pockets if you will make the effort, and write us for terms of any periodical you may desire. There are many publications on which we can save you more than your membership fee to the Exchange. When making inquiry regarding books please give author when possible, and always mention the publisher, enclosing stamp for reply.

THE American Geological Society has just concluded its second annual meeting in the new lecture room of the American Museum of Natural History in New York city.

About one hundred members were present. Prof. J. D. Dana was elected president; Profs. J. S. Newberry and Alexander Winchell vice-presidents and Profs. Stevenson and Williams were re-elected secretary and treasurer, while Profs. Powell, Dawson and C. H. Hitchcock were made executive council. A $10,000 publication fund was decided upon and $1.000 appropriated as a nucleus. After the historical address by Prof. Hall, which reviewed the important labors of the pioneer Geologists for the past one hundred years. interesting papers were presented by Profs. Chamberlain, Shaler, Newberry, Emmons, Orton, McGee, Williams, Winchell, Lawson, Russell, McConnell, Tyrrell, Bickmore, C. D. White, Dr. J. S. Diller and others. The sessions are considered to have been most successful. The Society adjourned to meet at Indianapolis during the sessions of the American Association for the Advancement of Science.

THE Kansas City Academy of Sciences elected officers for the ensuing year, as follows: president, Prof. Edwin Walters; vice-president, Mr. E. Butts; recording secretary, R. B. Trouslot; corresponding secretary, Mr. David H. Todd; treasurer, Mr. Edward T. Keim; librarian, Mr. Frederick McIntosh; curator, Mr. Sidney Hare. Executive committee: Edward T. Keim, Dr. Oscar Braecklein, Dr. R. Wood Brown, Dr. Joseph Sharp and Charles Dawson. Publication committee: R. B. Trouslot, Edward T. Keim and Charles Dawson. Programme for next meeting, Feb. 11: Dakota Tin Deposits, Frederick McIntosh; Teeth and Brain, Dr. R. Wood Brown; General Relation of Climate to the White Race, Dr. Joseph Sharp.

Total Eclipse of the Sun.

A total eclipse of the sun occurred December 23, 1889. Africa, South America and some of the South Atlantic Islands, notably Trinidad, were favored. The eclipse was total in the early part of the day in South America and in the afternoon visable in Africa.

Prof. David T. Todd, of Amherst College, had charge of a party for which Congress appropriated $5,000. They were located near the Congo River. Seventy pictures were secured before and a number after totality.

It is reported that no perceptible darkening occured until totality when at once a peculiar semi-obscurity covered the entire landscape.

The Lick observatory party under the direction of Profs. Burnham aud Schoeberle, located in French Guiana, on the northeast coast of South America. Here the period of totality was one minute and forty seven seconds, while at the African station it lasted three minutes and fifteen seconds.

New Books Announced.

All books reviewed or announced in these columns can be obtained from the Editor of this paper.

The Harper Brothers announce publication of "The Story of Emin's Rescue, as told in Stanley's Letters." It is copyrighted in the United States by Mr. Stanley, edited by J. Scott Keltie, Librarian to the Royal Geographical Society. The volume is accompanied by a map showing the route of the expedition, a sketch of Mr. Stanley's work and portraits of Mr. Stanley, Emin Pasha and Tippu Tib.

D. Appleton & Co., publishers. 1, 3 & 5 Bond street, New York City, announce the following forthcoming books;

Around and About South America; Twenty Months of Quest and Query. By Frank Vincent, author of "The Land of the White Elephant," "Through and Through the Tropics," etc., etc., with maps, plans and fifty four full page illustrations. 8vo. xxiv–473 pages. Ornamental cloth, $5.00. Ready now.

An Epitome of Herbert Spencer's Synthetic Philosophy. By F. Howard Collins, with a preface by Herbert Spencer. One vol. 12mo. Cloth, $3.00.

A Naturalist's Voyage Around the World. By Charles Darwin, F. R. S. An entirely new edition, handsomely illustrated, consisting of views of the places visited and representations of the animals described. One vol. octavo.

The Physiology of Bodily Exercise. By Ferdinand Lagrange, M. D.

Evolution of Man and Christianity. By the Rev. Howard MacQueary, 12mo. cloth.

The Evolution of Sex. By Prof. Patrick Geddes and J. Arthur Thompson. With 104 illustrations. 12mo, cloth, 322 pages.

The Religion of the Semites. Fundumental Institutions. By Prof. W. Robertson Smith. 8vo, cloth, 488 pages. Price $4.00.

Five Thousand Miles in a Sledge; a Midwinter Journey Across Siberia. By Lionel F. Gowling. With map and 30 illustrations in text. 12mo, cloth. Price $1.50.

Magazines Received.

The *Humane Journal*, of 242 Wabash Ave. Chicago Ill. is published monthly by Albert W. Landon, at one dollar per year. It is finely printed and beautifully illustrated and is devoted to its work, that of educating everyone to treat with sympathy and compassion all of earth's defenseless creatures. It comes endorsed by the ablest philanthropists, living and dead, and should have support from all who believe that education broadens the intellect and enobles the heart.

The *Ornithologists' and Oologists' Semi-Annual*, published by W. H. Foote, 43 Fenn St., Pittsfield, Mass. Best edition 35 cts., popular edition 25 cts. 50 pages and cover. Full page frontispiece illustrating "The Golden Eagle and Eyrie." Also numerous other appropriate illustrations. Devoted, as its name indicates, to Ornithology and Oology.

The *Oologists' Exchange*, a spicy little monthly published in New York City, sends a very tastily printed card, wishing us the compliments of the season, and a happy new year." Accept our thanks and permit us to remark that the *Oologist's Exchange* though small, should be in the hands of every amateur Oological collector, The address is P. O. box 2076, N. Y. City.

C. L. MENIFEE and Fred. Corless have our thanks for a copy of their Ornithologist's and Oologists' Directory. It is a neat little paper bound volume of forty pages. While no price is mentioned we presume it can be had for 30 cents, by addressing them at San Jose, Cal.

There are about 1000 hands engaged in the sponge fishing business in Cuba, who obtain annually about $800,000 worth.

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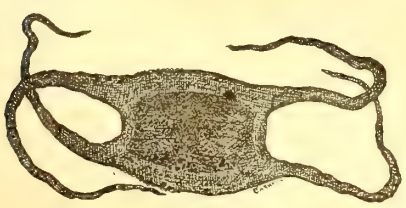

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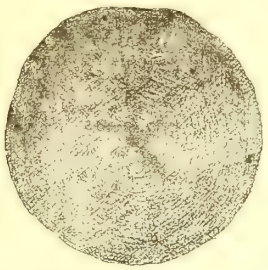

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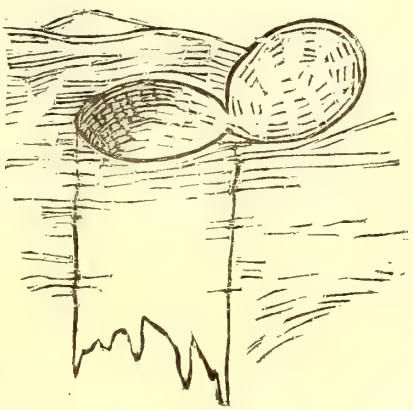

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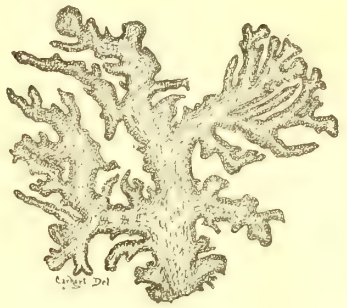

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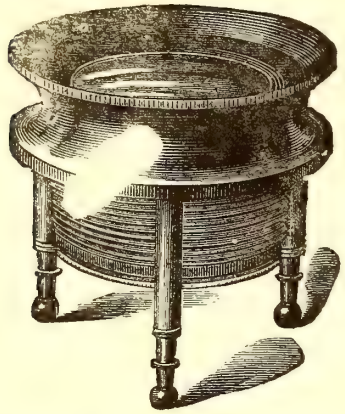

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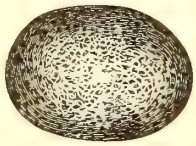

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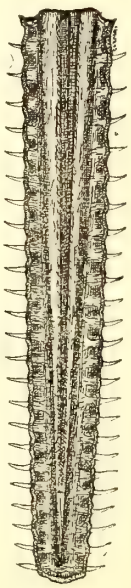

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Clippings.

It is a fact worth pondering that though the night falls around us, it never breaks; whereas the day breaks but never falls.

One reason why an expert fisherman is so silent at his sport is because he is waiting for a catch with baited breath.

People greatly prefer their grapes cold. Even soldiers do not like their grapeshot.

That electricity was known in early biblical times is proven by the fact that Noah made ark light on Mt. Ararat.

An Entomologist Whipped Wealthy.

Fifteen years ago John James Mago was a poor collector in Guetemala, and also acted as British vice-consul at San Jose. One day Commandant Gonzales ordered Mago to appear before him. Mago sent word he would come in a short time. This incensed the commandant, who was ugly with drink, and he sent a file of soldiers after Mago, and when the bug collector appeared ordered seventy-five lashes laid on his bare back. This was done thoroughly, and when finished Gonzales shouted:

"Give him twenty-five more for luck."

When Mago recovered, which was only after careful nursing, as his back was badly cut up, he made formal complaint to the British government. The result was Guetemala was ordered to punish Gonzales and to pay Mago $500 for every lash he received. In default of this, English cruisers would shell San Jose and other coast cities. Guetemala readily punished Gonzales, but tried hard to evade paying $50,000 to Mago. The British, however, were inexorable, and the poor bug collector was made a rich man in one day. His fortune is estimated at $5,000,000, all due to 100 lashes on his back. Mago is a quiet, middle aged, well dressed man, and now lives nine months of the year in Paris. While sympathizing with his misery, we congratulate him in his wealth, and hope he has not entirely renounced the Entomologist's joys which, in a country so prolific in specimens as Guetemala, must have been many.

A Clinton County Pennsylvanian asserts that you won't find malaria where there are rattlesnakes. That these snakes live near the purest water, the freshest air and on the the dryest and highest land, and further that you can always find trount where there are rattlesnakes.

Central Park, New York recently had donated to its menagerie a blackbird, taken on the steamer Moravia, on a trip from Hamburg, when nearly a thousand miles from the coast.

Colonel B. C. Barkley, of Charleston, S. C., says that the Curlews and Seaguils on that coast eat more clams than the entire population of the city. They pick them up, carry them into the air, drop them on the rocks, which breaks them open and then swooping down, feast on them.—*Scientific American.*

Probably no Oologist was ever so fortunate as an Akron painter, who while at work on a business block discovered a last year's birds nest, very likely of an English Sparrow, in a nich in the ornamental work and on displacing it, thougtlessly began to tear it apart, when to his surprise he found among the lot of strings and hay and other odds and ends a $10 bill.

The Naturalist.

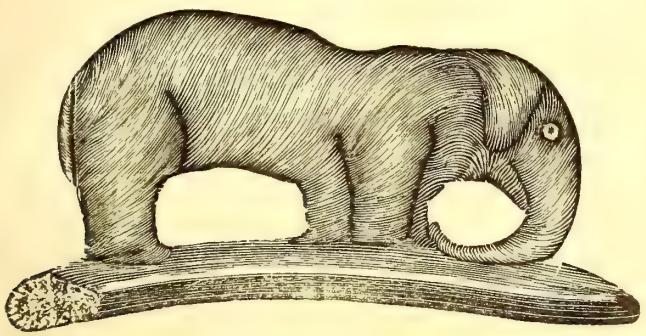
VOL. IV. KANSAS CITY, KANSAS, FEBRUARY, 1890. NO. 7.

For The Naturalist.

Those Elephant Pipes Again.

By Warren Watson.

There would be no excuse for reopening the controversy that raged a few years since, as to the authenticity of the Elephant Pipes in the Museum of the Davenport Academy of Natural Sciences, were it not for the fact that Maj. J. W. Powell, director of the Bureau of Ethnology, at Washington, recalled the subject by a sneer and a series of mis-statements in a recent paper in the *Forum*.



The passage referred to occurs in his article on "Pre-historic Man in America," in the January number of that magazine, and is as follows:—

> "Not long ago, a local society had in its possession two elephant pipes, the antiquity of which was questioned in a passing sentence of an article by one of the most skillful archæologists of the country. Thereupon the society held meetings and had their attorney make a careful investigation to see if the offending scientist could be successfully prosecuted for libel. And all this was in the interest of science, the high antiquity of man and the exaltation of the ancient Mound-builders!"

There are a few truthful statements in the above remarkable passage, but it is not too severe, under the circumstances, to aver that the greater portion of it is utterly untrue and Maj. Powell knew it to be so. It is true that the Davenport Academy had, and has, two Elephant Pipes and that the society held meetings subsequent to the publication of Henshaw's diatribe; it is untrue that it was the *antiquity* of the pipes which was questioned or that the criticism occurred in "a passing sentence of an article" or that the article was "by one of the most skillful archæologists of the country," or that the society consulted with an attorney looking toward a libel suit. It is true that what the Academy did was in the interests of science; it is untrue that they took any ground, with reference to the pipes, as to the high antiquity of man or looking to the exaltation of the ancient Mound-builders.

These assertions may seem astonishing in view of the eminence of the gentleman whose veracity is attacked, especially as the statements controverted appear in a widely circulated magazine; but the proof is easy and, fortunately, unquestionable. What could have induced a scientific man to introduce into the discussion of a question of this character the methods of the pettifogger or the stump orator is difficult to understand. If a lawyer should display such a lack of candor and veracity in the court room the court and his brother lawyers would treat him with such unconcealed contempt that he would never repeat the act again. Doubtless Maj Powell's hobby respecting the red-skin origin of the mounds is responsible for his conduct and if he is excusable at all, it must be for the reason that, like Jones, de Bourbourg and Donnelly, his "crank" makes him mendacious and irresponsible.

But to the proof: In the second volume of the annual reports of the Bureau of Ethnology, a paper by one H. W. Henshaw, appeared on the general subject of "Animal Carvings from Mounds of the Mississippi Valley." In the introduction to the volume, written by Maj. Powell himself, Mr. Henshaw is not alleged to be an archæologist at all, but is said to be "skilled as a naturalist, especially as an ornithologist." This is the person alluded to in the *Forum* article as "one of the most skillful archæologists of the country!" If he was an archæologist why did not Maj. Powell introduce him as such when printing a paper by him that could derive force and influence only through the possession of special knowledge and skill in that direction by its author. But, so far from being a skillful archæologist, he was not an archæologist at all. Rev. J. P. MacLean, the author of "Mastodon, Mammoth and Man," in a letter to Mr. Putnam of the Davenport Academy, states: "I had supposed that the names of all American archæologists and ethnologists were familiar to me but the name of Henshaw is entirely new;" Capt. E. L. Berthond writes also: "I know something of Mr. Henshaw and I think he has 'brass' enough in him, in thus settling, *ex cathedra*, what has puzzled and foiled the repeated attempts of some of the best antiquarians in America for over half a century;" Dr. Willis de Hass, of Washington, speaking of Henshaw and others says: "The persons of whom you complain are not archæologists and their opinions on such subjects are not regarded as possessing weight by competent archæologists;" Dr. D. G. Brinton, one of the most famous *Americanistes* in the world, says of Mr. Henshaw's article: "From my first reading of his article I considered it a paper not composed in the true spirit of science and out of place in the publications of the Bureau."

Was Mr. Henshaw one of the most skillful archæologists of the country?

Falsehood number one!

Next, it was the *authenticity*, not the *antiquity*, of the pipes that Mr. Henshaw questioned; and it was the insulting and brutal manner in which this was done that excited the just anger of the Academy, not the fact that the genuineness of the relics was denied. The antiquity of the pipes is a secondary question which could not be reached till their authenticity was recognized; the Bureau denied this and the Academy affirmed it; the secondary question, their antiquity, was never discussed or even reached for discussion.

Falsehood number two!

So far from this criticism of Mr. Henshaw being confined to a "passing sentence," any one can see by turning to page 152 of the volume above referred to, that one of the sub-heads of his article, "The Elephant Mound," commences on that page and runs nearly to the bottom of page 158, at least five quarto pages! This is the passage referred to, for the elephant mound is only brought in as an excuse or pretext for "questioning" the authenticity of the pipes and is only briefly discussed; the greater portion of the five pages being taken up with the "destructive criticism" of the pipes.

Falsehood number three!

The Society did not have their attorney, or any attorney, look up the law of libel in order to punish the offending scientist (?); but upon the matter coming to the attention of Mr. S. D. Peet, editor of the *American Antiquarian*, referring to Henshaw's statements, he remarked in Vol. VII, No. 2, page 127, line 19; "We should consider it a libel if it was said of us." There is little doubt but that the language used was libelous, but no one thought of a libel suit until Mr. Powell imagined that the insinuation would give an additional sting to his sneer.

Falsehood number four!

No question arose as to the high antiquity of man in the whole dispute—at least

none that was pertinent to the point in issue,–therefore the imaginary libel suit could not affect that, either in vindication or the reverse. Neither was any attempt made to exalt the Mound-builders. Even if genuine, the pipes might have been deposited at so recent a date that they would cut no figure in the Mound-builder controversy; the only thing in issue was their authenticity. This being established their necessary bearing on the other question could be adjusted. Mr. Putnam, of the Academy, in his answer to Mr. Henshaw's screed, laid special stress on this point; "it is, therefore," said he, "full time for a calm and thorough review of all the circumstances surrounding these discoveries, with the view of finally disposing of all questions as to their *authenticity*."

What will be thought of a man in Maj. Powell's position, who thus wilfully violates every prompting of fairness and decency? Does he imagine the world is composed of fools and dolts and that his insincerity and obliquity will not be discovered? Verily, if official science wishes to preserve sufficient authority and respect to impose its hobbies on students, it must acquire a new reputation for truth and veracity; its old one is gone. The mere fact that Maj. Powell resorts to such measures shows the weakness of his cause, and we are certainly justified in distrusting any statement made by a person who thus wantonly and deliberately trifles with the truth,—he who is false in one thing is false in all.

One word in conclusion as to the genuineness of the pipes. Mr. Henshaw's "destructive criticism" was founded mainly upon ignorance of the subject (for he confessedly never examined the pipes or a correct representation of them) and upon perversions of the facts connected with their discovery. If the pipes are fraudulent it is certainly an astounding evidence of dishonesty in men otherwise of the highest character and veracity; a dishonesty, too, so causeless and unremunerative that it seems utterly unaccountable. For one of the pipes not a cent was paid; for the other, which belonged to an Iowa farm laborer, and which was borrowed by the Academy and accidentally broken, two or three dollars was paid. Invariably when one goes to the trouble of manufacturing spurious antiquities it is with the purpose of profiting by it; but in the case in question no one profited except the laborer, who was entirely disconnected with the Academy and who received but a small fraction of what the pipe was worth if genuine. It is true these finds are unique and in this respect require great circumspection in their authentication; but this fact does not justify the brutal unfairness exhibited by Maj. Powell and his pseudo-archæologist, Mr. Henshaw; especially when we consider that it is the money of the government and the prestige of official position that gives their attack a force and currency above that of mere personal opinion. If the power placed in Maj. Powell's hands is to be misused and prostituted to the furtherance of his own hobbies, instead of the interests of science, a concerted action should be taken by all interested in scientific pursuits, looking to an investigation by Congress into the policy, methods and expenditures of the Bureau, to the end that the liberal sums appropriated from the public funds in aid of ethnological inquiries may not be diverted to the exploitation of personal hobbies and the aggrandizement of servile followers.

For THE NATURALIST.

The Resurrection Fern.

(*Pollypodium vulgare*).

By "ARKANSAW HOOSIER."

Although this fern may be well known to botanists and scientists, I dare say there are few, if any, of the readers of THE NATURALIST, who are acquainted with its tenacity of life. One may ramble over the hills and through the forests of Arkansas and see this little wonder growing on rocks and trees. He may pluck the leaves from a thrifty group or note others "perished" as he passes by. He may even analize it without suspecting its intermittency of life. It seems almost beyond reason that a living fern, once so fresh and green, should wither and curl its leaves, in drouth, as if dead, only to unroll, as bright and live as ever, with the first shower. It matters not how long and dry the hottest summer, it is not discouraged but sleeps on, waiting for rain. As its name implies, it is many footed, branching or creeping. It thrives best on moss covered rocks on the mountains and the trunks of trees in the valleys, sometimes covering the entire surface of a huge rock or the body of a "monarch of the forest." I have never seen it growing in earth like its cousins: preferring higher, dryer air, its intermittency enables it to prolong life. It is not a parasite, as it only lives on soil collected in the roots of mosses and remains green as long as it receives moisture. When plucked it does not die like its kindred but is only "Possuming," reviving as often as it is moistened. For two years a single specimen has afforded me much pleasure. When a friend comes I have but to place it in a plate of water and in a short time, much to his surprise, we are admiring a real live fern. While this fern has the properties of the Resurrection Plant, it has other qualities which make it more desirable. A single specimen may be arranged one half green and the other dried up, thus representing both stages. It finds favor with the florists in making up cut flowers as it supplies the flowers with moisture, and what is more beautiful for a background than a sheet of fern leaves. The same sheet can be used many times. The leaves are from two to three inches long by one and one fourth broad and often completely hide the underlying moss. As a curiosity it has no rival in my collection.

J. D. ALLEN,

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Palæontological Discoveries In and Near Kansas City, Mo.

By David H. Todd.

[Concluded.]

Having passed through the various divisions of fossils that inhabited the water, we now come to the vegetable kingdom known as the fossil flora of the coal age. The plants of the coal measure teach us many important things. The production of vegetation must have been perfectly marvelous, when we consider the great mass of vegetable matter that has accumalated. This wonderful production forms a very important part in Palæontology, and embraces a wide field for study.

Every day is bringing to light new material, thereby adding much to the already collected mass, giving new light on many confused points in Palæozoic Botany. This division of Palæontology will require almost the constant attention of a specialist and the student who wants to make himself thorough in this department must thoroughly understand not only fossil botany but recent as well.

Our locality here does not afford much material as only few plants are found and these are not considered good being mostly matted together; among those recognized are *Calamites*, *Neuropteris*, *Pecopteris*, *Annularia*, etc., but at Lansing, Kansas, 25 miles north of here, some very fine specimens are to be found in the coal beds. The plants are colored by sulphate of iron giving them a bronze and green color. Mr. Oscar Lamb, superintendent of the shaft, saves all the material so that nothing of any value is lost. In connection with the finding of plants, the only fruit or nuts is the *Trigonocarpus starkianus* found in the blue shale which is admirably preserved although not more than 3 or 4 specimens have been found. In making a review of the ground gone over I omitted to call the attention of the collector to the *Conularia crustula*, which is the only representative of the Pteropoda; it is found in a thin red and cream colored seam or shale along the west bluff; is considered rare in other places but quite common here. The *Naticopsis* is represented by several species and is found in the Oolite and blue Limestone.

Before closing I desire to call attention to the Loess formation: there are but few if any places, where a better observation and study can be had of this much confused question. The Loess is a very fine grained calcareous deposit. Some difference of opinion seems to exist among Geologists as to the real nature of this formation: considerable discussion has been entered into, as to the cause of this deposit, whether from wind, drift or gathered in fresh water. It extends over a vast area of territory not only in the Missouri Valley but also the Mississippi, parts of Asia and the Rhine. The best place of observation here, is at Lydia Ave. and 1st St., where the deposit is some 60 feet in depth and over-lying the drift. A large number of concretions are found all through this deposit and oftentimes the collector by breaking them open is rewarded by finding parts of bones and teeth of the Rodent, Elk, Mastodon and other animals.

This my friends closes a review of our fossils; while not complete in every detail, yet enough is said to insure the collector of a rich reward for the time spent in gathering the material that is around us.

Electricians at Kansas City.

The eleventh semi-annual convention of the National Electric Light Association just adjourned met in Kansas City on the 11th. Many important papers were read, but the two receiving the warmest reception were by Prof. Elihu Thompson, of Lynn, Mass., on Safety and Safety Devices in Electrical Insulation, and by Mr. Frank J. Sprague on Electricity as Applied to Street Railways. On Friday afternoon the Coates Opera House was crowded and, after a plain explanation by Edward Johnson, of New York, of the discovery, workings and principles governing the Phonograph, an inproved machine, loaned for the purpose by Mr. E. T. Keim, now manager of the Phonographic business in this state and operated by R. B. Trouslot, reproduced a cornet solo of Jules Levy and then the phonogram from Mr. Edison of Menlo Park, Orange, N. J. dictated Feb. 7, was given. The following is the phonogram complete.

Edwin R. Weeks, Esq., Kansas City, Mo.
My Dear Mr. Weeks: When I had the pleasure of meeting you at my labratory in December last you suggested that I should send to the Kansas City convention, which commences next week, a phonogram discussion upon the the subject of my fine wire system of distribution, which you were good enough to assure me would prove of interest to the delegates, and ever since that time I have been trying to find an opportunity to prepare the data.
My failure to do so has been through no fault of yours, as your letters have constantly kept the matter before me; nor has it been through want of inclination on my part that I am obliged to substitute this explanation. Certain urgent matters of business which I was unable to anticipate have occupied my attention to such an extent that I have even had to neglect the important work of my experiments.
While I could not have contributed to the success of the convention, which is already assured through its location in your enterprising city, I regret that I am unable to send something which would at least be more interesting than this apology.
Yours very truly, Thomas A. Edison.

The tones of the cornet were exact, and Edison's voice, though not loud, could be distinctly recognized from any part of of the house.

Wanted: 100 copies of October Naturalist (No. 3, Vol. IV). Will pay five cents each or date your subscription ahead two numbers. Addres,
Editor Naturalist.

"What is Mr. Barnum's motto, pa?" "Give every man a show!"

The Anterior Arts.

By "Ictinus,"

Art is a source of instinctive emotion, from whose fountain many branches spring to refresh and elevate the mind. The same artistic affect can thus be produced by any one of the fine arts. The musician, the architect, the sculptor and the painter may each, in his own peculiar language express the same sentiment, and to a certain extent arouse the same emotion. These several artists ply their crafts with intelligent minds; each of them know how to arouse the same sentiment in the minds of those who see or hear. The different forms of art appeal to the senses, and the senses in different ways, arouse the dormant thoughts. Any intelligent person may be driven into ecstacies of delight, by the lively strains of music; by a chaste and beautiful combination of architectural forms; by sculpture, which is life carved in real marble; or by a painting, a picture of life in varied shades, and on the other hand, sorrow, terror, grief or fear may be expressed by any of the arts, to the extent of their phonetic value. The sentiment thus aroused, by one or more of the arts, is our artistic instinct, and it is the business of the professors of the arts to understand how to excite the artistic instinct, by means of that branch of art to which they have been so highly called.

Let a man enter a large crypt (or vault under a church), supported by many stout and massive columns; the interior low and gloom, with heavy horizontal lines, dying as they recede in the distance. Though he can walk with ease, he will lower his head: sad thoughts will present themselves to his mind; he will crave for air and sunshine. Let the same man enter a building whose vaulted roof penetrates the sky, a temple flooded with air, and brilliant with light; he will raise his eyes, pleasant thoughts will fill his mind, and awaken him to a sense of the simple beauty that surrounds him. When a traveler enters the basilica of St. Peter's at Rome, the first thing that greets his eye is the immense dome that crowns the structure. His attention is instantly fixed upon it. The pillars of the church are of marble; magnificent tombs and trophies stand there in stately splendor; but he overlooks them and advancing step by step, he seeks to penetrate the depths of the distant cupola; he must be reminded that he is jostling against statues and vases, treading upon porphyry, and desecrating the sacred place, before his gaze is attracted by objects near enough for their beauty to be seen. He is filled with inspiration; he instantly feels that there is something grand and noble in man, and, by the influence of that most sublime work of ecclesiastic architecture, he realizes that He who created man, and endowed him with artistic instincts, is greater than man. Lines long or short, vertical or horizontal; vaults high or low; chambers gloomy or brilliant, thus arouse

different sensations in the mind. This is simple and natural but the mind is complex; by means of an inborn faculty, the functions of which we do not understand, it forms certain relations between sounds, forms and thoughts; relations, though strange they may seem, are none the less real.

When we consider a people who have given expression to the loftiest ideal of beauty in form, the memory of which has endured through the ages, we may justly believe that the result was produced by a harmony of the various forms of art; all fired by the same motive, and directed to the same purpose. The people who first realized the value of this harmony instituted the theater, the most perfect expression of the unity of the arts, and which has become an indispensable feature to refined and intelligent people.

The Greeks were bold, indeed, when they ventured to unite the different forms of art in their theaters, to form an orchestral union, that together they might arouse in the minds of the people a harmonious sentiment; to unfold out of these elements of art a symphony, as it were, in which each of them should utter, at a given moment, its part of one complete, musical union.

In later days, when the theater of the Greeks had been vanquished by the power of Rome, these concerts of the arts were held again, but in a different fashion. The people of the middle ages were not ignorant of the close relation existing between the different forms of art, when they built their gothic cathedrals; for in them the noble architecture and the music, the sculpture and the painting, the inspiring ceremony and the voice of the chanting priest seemed to direct all souls to one sublime, heavenly thought.

If antiquity possessed this scenic power to an exalted degree, the Mediæval period, in this respect was no less richly endowed.

Art should be considered as a single agent, taking upon itself, different forms to impress the minds of men; and it is when these different forms are combined or placed in concord, at the same time and place; when actuated by the same motive, they produce the most vivid and lasting emotion that man can experience. The epochs which have thus given expression to the most heavenly gifted sentiment by means of the harmony of the arts should ever be regarded as the most precious periods in the history of the human race. Such an epoch may be brief, but that does not decrease its value any more than the transient life of a lily injures the quality of its perfume, the purity of its color, or the simple beauty of its petals.

We have seen how the first glimmerings of art enlightened the mind of man; imagination was its source, imitation of nature its means. Man cannot create, he can only by selecting a few of the elements of Divine creation and uniting them, give birth to what may be called a creation of a second order. But man's imagination would only produce misty dreams that vanish in the light, if he were not endowed with an impulse which compels him to give expression to those dreams. This impulse is his reason.

We suffer a wrong to day which we cannot help, for we are the victims of circumstances over which we have no power. The ancients in preceding us have deprived us of the simple and beautiful ideas which we would have possessed, had it not been that we were born too late. We can not act, like them, according to an unique system. The duties of a modern practitioner of art are more difficult. We toil under prejudices belonging to civilizations of the past, and besides these, we have now our own modern needs, habits, and conventionalities. If however, we can not act according to an original method, we should, like the ancients, use our faculty of reasoning, as well as that of feeling, in all our works. It is by means of these two faculties we should seek for the true and the beautiful. Reason explains that which the taste makes known, and taste is but an involuntary and consequently an unfelt act of reason. To acquire taste is but to become familiarized with the true and the beautiful, we must learn how to choose it. Now to intelligently make this choice, we must use our faculty of reasoning.

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KANSAS CITY, FEBRUARY, 1890.

SEVERAL new premiums have been added to the list. Look them over carefully and then send us 50 cents for a years subscription.

WE are still short of the October, 1889 NATURALIST. Copies will be thankfully received or good exchange will be allowed.

OLIVER DAVIE occasionally speaks of his forthcoming book on Taxidermy. No doubt it will excel all past publications on that subject as his Birds of North America excels all similar works.

WHEN subscribing to THE NATURALIST. we will consider it a favor if you will permit us to date your subscription from the beginning of Vol. IV; also please notice our clubbing rates in another column.

WE will supply a limited number of sample copies of the NATURALIST to such of our friends as desire to help us by obtaining a few subscribers. We can offer no cash remuneration but will try and cancel all such obligations to the entire satisfaction of club getters.

MR. DAVID H. TODD, of Kansas City, Mo., has our thanks for several fine specimens of Jasperized wood from Arizona. He has several hundred pounds and is prepared to fill orders both wholesale and retail. For further particulars we would refer you to his "ad" elsewhere in this paper.

MR. C. F. PLEAS, of Clinton, Arkansas, sends us a fine specimen of Resurrection Fern, *Pollypodium vulgare*, which is described elsewhere. This fern possesses all the peculiarities of the Resurrection Plant. The ones sent us were perfectly dry and apparently dead, but rapidly revived on being placed in a saucer of water and are now looking vigorous and healthy.

WE are in receipt of several sheets for recording Ornithological observations. Any one interested can obtain similar ones by addressing Hon. Edwin Willits, assistant secretary of Agriculture, Washington, D. C. Our observations will necessarily be only of the fauna of Kansas City, Kansas and Kansas City, Mo., but at the end of the year, if we mistake not, will have observed not a few visitants hitherto supposed to be rare in this section.

A CIRCULAR received from Samuel A. Miller announces the completion of his North American Geology and Palæontology. Five hundred pages of the work are devoted to the definition and laws of Geology, Stratigraphy and Nomenclature. The balance of the work, one hundred and sixty four pages, relate to Palæontology and is profusely illustrated with more than 2000 figures. The volume is highly recommended by several state Geologists and is, no doubt, well worth the $5.00 asked.

THERE is a class of which we think of only as "sample copy" knaves. When the same person writes month after month "Please send me a sample copy of your NATURALIST as I am anxious to subscribe for some Natural History paper," it surely flavors of knavery. We are willing and anxious to submit a sample copy but when it comes to donating a year's subscribtion to Tom, Dick and Susan it becomes monotonous, and should we continue to be troubled in like manner several rather "fresh" young people will get the benefit of some free advertising.

THROUGH an oversight on our part we neglected to acknowledge receipt of a fine specimen of Crinoidea presented to us in December, by our friend Mr. David H. Todd, of Kansas City, Mo. As there is considerable confusion as to what the genus and species of the various specimens recently found here, may ultimately prove to be, we will not venture to name it now. The head, arms and stomach are all well exposed; the specimen being some larger than the illustration in the October NATURALIST. Mr. Todd has our sincere thanks for this specimen, which is the only representative in our collection of the great number of Crinoids found here the last few months.

GOOD taxidermy is a scarce article, there being only a few Taxidermists who have, after long years of patient study and practice, become at all proficient in their chosen calling. Skilled workmanship in any profession commands good remuneration. Now, having seen, unbeknown to Mr. Allen, several examples of his skill, we feel like heartily endorsing him and our readers will find by referring to his half column advertisement, on another page, that his prices for good workmanship are minimum. We are not personally acquainted with Mr. Allen, but having often heard him well and favorably spoken of, we assure our readers that anything entrusted to him will receive his prompt and careful attention and further that the utmost confidence can be placed in Mr. Allen's judgment in selecting and filling all orders.

PROF. DYCHE, instructor in Anatomy and Physiology at the University of Kansas, also Curator of Birds and Mammals, called on us recently between trains, on his way home from one of his usual weekly lectures. The Professor has recently returned from a six months hunting expedition in British America, well supplied with skins of the larger mammals found in that country, all of which were killed by himself. He is a Taxidermist of national reputation, rivaled by no one, not even excepting Hornaday, and as he gave particular attention to the anatomy of the specimens obtained, the University will shortly possess the finest group of Mountain Sheep, Mountain goat, American Lions, etc. in the U. S. as it now possesses the finest group of stuffed American Bison in the world. The Professor is a very pleasant gentleman and we trust it will be convenient for him to call often.

THE old story oft repeated of the danger to be apprehended by the opening of gas wells, comes up in new form; originally the locality named was China, but the remoteness led people to discredit the assertion. Now, an English scientist warns the people of the United States and says that the average pressure at which gas issues from the wells is 200 lbs. to the square inch, equal to 28, 000 lbs. to the square foot, and for each square mile, about 458,436,571 tons equivalent to the weight of a fair sized mountain. When the reservoir is exhausted and the supporting pressure is withdrawn the superincumbent strata would give away and a catastrophe more terrible than an earthquake would follow, but our knowledge of terrestial dynamics is so limited and cause and affect so little understood in a matter concerning so great an area and with such a complexity of elements involved that it will not prevent the work of sinking wells.

"EXTERMINATION OF AMERICAN GAME."

On page 82 of *The Scientific American* for Feb. 8, 1890, is an article headed as above, which draws profusely from a recent paper by W. T. Hornaday, Chief Taxidermist of the Smithsonian Institute, though where the paper was published is not stated. From it we glean that American Bison in a wild state have long been extinct; that the Elk and Prong-horned Antelope will be next to go; that there are now scarcely 150 head of Moose left in the United States; that the Black-tailed or Mule Deer is surely being exterminated; that the Rocky Mountain Goat is as good as already gone with us; and that the Mountain Sheep or Big Horn is sharing the same fate.

Hornaday says Caribou and Virginia White-tailed Deer will be hard to exterminate from the fact that both live in the "thick woods, the leafy tangles and evergreen forests," the Caribou in the same latitude as the Moose and the Virginia Whitetail in the Eastern States. The old Hudson Bay Fur Company is practically defunct, there being no more furs to be had. Beaver Otter, Mink, Martin and Sable being scarce trappers are now taking Muskrats and even the little gray Rabbit. The southern fur Seal is gone and its northern brother is being indiscriminately slaughtered; the California Elephant Seal is extinct; the Walrus is rare; the great Arctic Sea-cow is gone and its congener the Manatee, is now a curiosity. Bears, particularly the Grizzly, Lynx, Wolves and Foxes are fast going and milliners' taxidermists are slaying singing birds in vast quantities. Much has been said about the "Great American Egg-hog" but even the A.O. U. Oologists that supply their cabinets in the name of Science, with several thousand Warbler eggs is a saint with golden crown, and ermine robe compared with the vile wretches who, for a few paltry dollars, snare, trap, poison and shoot the feathered denizens of the forest to pamper a fashion persisted in by a few brainless females, or possibly males who happen to be "leaders" and are followed by a large majority of the feminine race, as one block-head sheep follows another. With the fact that our animals are practically exterminated, and that the demand on the feathered tribe is increasing, is it not high time that National laws be passed and enforced, protecting the birds, especially the Warblers?

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Regular meetings for the next six months occur on the following dates:
Feb. 25; March 11, 25; April 8, 22; May 6, 20; June 3, 17; July 1, 15, 29; August 12, 26. All are cordially invited.

MEETINGS UNTIL FURTHER NOTICE AT 908 WYANDOTTE ST.

Members present were called to order by Vice President E. Butts. The Secretary being detained Mr. E. T. Keim was elected pro tem. The minutes of the last meeting were read and accepted. The Treasurer's report for 1889 was read, approved and placed on file. Communications from J. D. Parker, the founder of the Academy, and Secretary for seven years, and W. H. R. Lykins, were read. Mr. Lykins offered to donate a set of N.Y. State Geological Reports and other valuable scientific works. On motion the donation was accepted. In the usual manner, R. R. Conklin was elected a member of the Academy.

C. W. Dawson reported a find of Crinoid Heads on Troost Ave. near Brush Creek. The locality will have further investigation by members of the Academy. Mr. Frederick McIntosh then addressed the Academy, on "The Tin Deposits of Dakota." The Deposits are very extensive, and are chiefly owned by the Harney Peak Mining Co., having a capital of 35 millions. There are 115 mines now opened. The ore is a carbonate and a silicate and is found in veins from 2 inches to 17 feet deep but the great problem is how to separate the tin; in the Etta mine 17 ozs. of ore being left in the tailings. The country is hilly and moutainous and in many sections entirely devoid of timber and water. The strata are much contorted, and the series from Archaen to Cretaceous can be seen in an hour's walk. Natural Gas and Petroleum have been discovered but not worked. The Cornish Tin mines in England run ½ of 1 per cent., whereas the Dakota mines average 60 per cent.

Among the many specimens exhibited which he obtained while there were crystals of Tin, Albite, Greenstone, Mica, Rubies in Mica Chist and Copper ore containing Gold and Silver. Upon the conclusion of Mr. McIntosh's remarks, Dr. R. Wood Brown, read a paper on Teeth and Brain, illustrating same with crayon drawings; the paper was well received. No further business appearing the Academy adjourned.

The Pre-historic Men With Lieutenant Frederick Schwatka.

Lieutenant Schwatka was first rendered famous by his expedition in search of the remains of Sir John Franklin, to the Arctic coast, in 1878 and subsequent explorations both in the Arctic region and in Alaska. But his recent return from Mexico with a band of nine Torahumari, natives of the Sierra Madre mountains, is once more bringing him prominently before the public. The band consists of four men, three women and two little babes. They are probably the first representatives of the cliff and cave dwellers that have ever been brought into any civilized country. They are a thin, cadavorous looking set, a little below the ordinary size. Their complexion is a light creamy color and they have long, glossy black hair. Their clothing is a blanket made by themselves of goat hair and their sandles of goat skin. They are a shy, timid race, dwelling in the almost inaccessible caves of the Sierra Madres. They hate Mexicans and flee from white men with all the speed at their command, outstripping a horse with great ease.

Repeated attempts have been made to get representatives of this strange race, of which there are only about 3000, but to no effect. Schwatka had considerable difficulty in getting his little band of pre-historic people. He first obtained twenty by and through the aid of a half breed but they stampeded on sight of a railroad train. Again he started with sixteen but they slipped away, one by one, until he now has only nine.

They are said to be the happiest people in the world, as well as the fleetest of foot; the latter being the meaning of their name, Torahumari. They traveled with the Lieutenant, all the way from El Paso, in a caboose, and in a measure, have become attached to him. The moment he is out of sight they grow restless and dispirited. Schwatka goes from here to Chicago, where he will exhibit his natives in illustrating his lectures on pre-historic man. He intends visiting the larger cities of this country and Europe, when he will return to the home of the cliff-dwellers for further investigation.

Most of the band with Schwatka are Sun worshipers, and the Lieutenant believes that they are direct descendants of the old cliff-dwellers of Arizona and Mexico.

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Magazines Received.

American Osprey, I, No. 1, Feb. 1890. Published by Paul B. Haskell, Ashland, Ky., at 25 cents per year, 4 pages.

The *Empire State Exchange* published by Perrine Bros. & Co., Water Valley, N. Y. at 25 cents a year. Nos. 1, 2 and 3 of Vol. I received. Quite an entertaining little magazine.

The *Ornithologist and Oologist*, XV. No. 1. Jan., Published by Frank B. Webster, 409 Washington street, Boston, Mass. $1.00 per year. Its frequency (monthly) and valuable and interesting contents, place it in the lead of all other Ornithological publications.

The *Observer*, I, Nos. 1 and 2, January, 1890, illustrated. Published by E. F. Bigelow, Portland, Conn., at 50 cents per year, 8 pages 11 x 15½. A new paper devoted to Natural History, Popular Science, Educational matters and general literature. We wish Mr. Bigelow all the success his meritorious paper deserves.

The *Nautilus*, III No, 7, November 1889. 12 pages and cover and one full page illustration, $1.00 per year. 10 cents per copy. Edited by H. A. Pilsbry of the Academy of Natural Sciences, Phil., W. D. Averell, Manager, Mt. Airy, Phil. The first copy of this excellent magazine is before us. Typographically it is faultless; printed on a fine grade of book paper with good ink; its pages are quite readable even to a person not interested in Conchology.

Vick's Illustrated Monthly Magazine, XIII, No. 2, February, 1890. Published by James Vick, Rochester, N. Y., at $1.25 per year. It has an enviable reputation among horticulturists and all interested in home beautifying with flowers, and gardening. They have just issued a very elegant premium which will be given to every subscriber to their magazine. The title of this beautifully illustrated souvenir is "Myself," and is really worth double the subscription price of the magazine which it accompanies.

Pysche, a journal of Entomology, Vol. V, Nos. 153 to 165, both inclusive. Published by the Cambridge Entomological Club, Cambridge, Mass. Monthly numeros 20 cents; yearly subscriptions $2.00; complete volume $5.00. The January number, now before us, has 16 pages including cover, and contains the following papers: The Work of a Decade upon Fossil Insects, 1880–1889, Samuel H. Scudder; The American Plum Borer, *Euzophera semi-funeralis*, A. Forbes; Description of Some New North American Moths, W. Bentenmuller.

Books Received.

All books reviewed or announced in these columns can be obtained from the Editor of this paper.

Elephant Pipes in the Museum of the Academy of Natural Sciences, Davenport Ia. (A vindication) by Chas E. Putnam, 1885. Kindly sent us by W. H. Pratt, the Curator. The Bureau of Ethnology, of which Maj. Powell is Director, sanctioned an ungentlemanly aud brutal attack by an ornithologist who is, it must be confessed, only a pseudo-archæologist and the pamphlet above referred to is "A vindication of the authenticity of the Elephant Pipes and Inscribed Tablets in the museum of the Davenport Academy of Natural Siences, from the accusations of the Bureau of Ethnology of the Smithsonian Institution."

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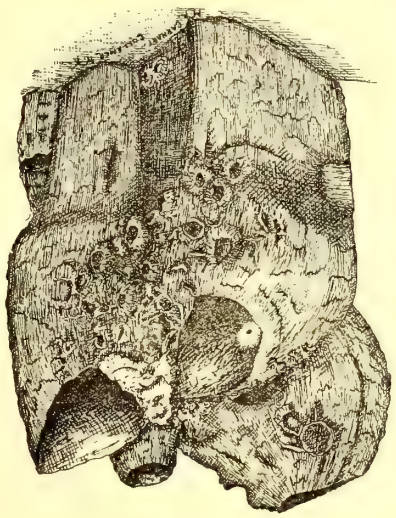
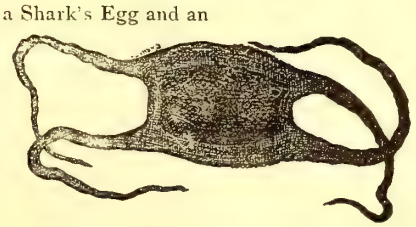


a Shark's Egg and an



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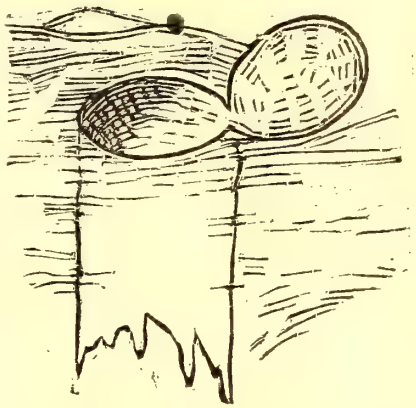

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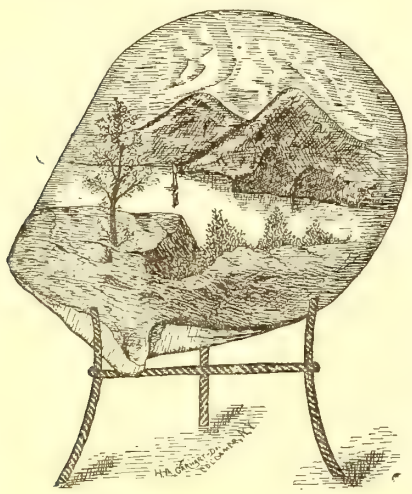

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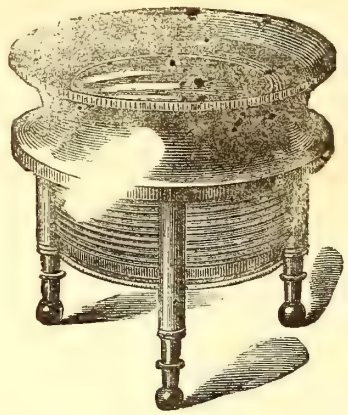

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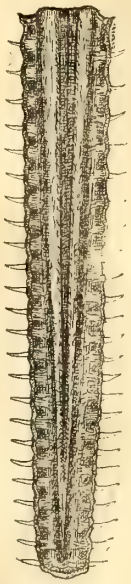

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The Naturalist.

VOL. IV. KANSAS CITY, KANSAS, MARCH, 1890. NO. 8.

Some Notes on an Outcrop of Fossiliferous Limestone, Probably Representing the Very Top of the Hudson River Group.

By R. R. ROWLEY, Curryville, Mo.

Two miles northeast of Edgewood, Pike Co., Mo., immediately overlying blue shales yielding *Monticulipora*, *Conularia*, *Asaphus* and other well known Hudson River fossils, are outcrops of brown earthy limestone, from two to four feet in thickness, giving a very interesting series of fossils, wholly unlike the Hudson fauna below and the Oolitic species above. Some years ago we referred these beds to the Niagara Group, supposing them to underlie directly the Oolite and wrongly identifying, too, some of the fossil remains. We have, as yet, never been able to find an outcrop with the superimposed beds exposed but are now of the opinion that the correct place in the Geological series for these rocks is the top of the Hudson River Group. The fossils are of Molluscan and Radiate types, no Trilobites having been discovered. Four or five GASTEROPODS of the genera *Cyclonema* and *Murchisonia*, a handsome *Orthis*, a fine *Zygospira*, a *Rhynchonella*, a *Meristella* like BRACHIOPOD, a *Streptelasma*, a *Tentaculites*, a very flat species of *Streptorhynchus* and quadrangular columns of a Crinoid, doubtless a *Compsocrinus*, compose the fauna of these interesting beds. Of these fossils the *Cyclonema* is represented in the collection by but one imperfect specimen of rather large size. The other GASTEROPODS are much smaller but of undescribed species. The *Orthis* has been referred by Mr. Charles Schuchert of the New York State Museum, to *O. meeki*, but differs specifically from that form. The *Streptelasma* may be *S. corniculum*. Series of these fossils have been furnished the late Prof. A. H. Worthen of the Illinois Survey, Prof. R. P. Whitfield of the American Museum, Charles Schuchert and Walter R. Billings of Ottawa, Canada, but the species have not, as yet, been referred correctly to already described Hudson forms.

A number of years ago a magnificent specimen of *Asaphus megistus* (?) was found in the blue shales at the locality mentioned above; a perfect individual, over eleven inches in length, which found its way into Van Horn's collection, in St. Louis. The Oolitic limestone, supposed to overlie the rocks under consideration, contains an abundance of Coral remains and is, doubtless, of the age of Niagara limestone, although Prof. Swallow, in the old Missouri Report, referred it to the Onondaga division of the Corniferous or upper Helderberg Group. Our reference of it to the Niagara is mainly based on the occurrence of *Halysites catenulatus*, a characteristic fossil of the Niagara Group of rocks. We should have stated above that of the fossils enumerated from the top of the Hudson River beds, the *Orthis* and *Zygospira* are the commonest species, being scattered through the clays at the road sides and well preserved in a silicified condition.

If these notes are of interest to the readers of THE NATURALIST, we shall be glad to communicate, in the future, other notes on Missouri fossiliferous rocks from which we have personally collected.

Bird Life in the Far North.

In a recent publication, Dr. Stejneger of our National Museum, details an account of the bird life of the Arctic region and the following selections are taken from his account of the Tufted Puffin, a sea bird which frequents that portion of the Arctic world. This bird is called by the natives "Toporok" (plural "Toporki") and is among the most numerous of its family on these islands, and their flesh is an important factor in the food supply of the natives. The skins also are carefully taken off and made into warm and nice garments, called "parka," with the feathers turned inside. About 50 skins are required for one "parka." In order to remove the fat from the skins, they are chewed over and again by the women and children, until all the fatty matter has been chewed out, that being their method of tanning.

With the beginning of May these birds commence making their appearance on the coasts of the islands. The natives, heartily tired of their winter food, the salted seal meat, look forward to the arrival of the Toporki with great impatience and as soon as a sufficient number are observed in the neighborhood of the old rookeries, parties star off in order to catch a good supply for food and clothing.

On a bright afternoon in May—and at that season really some fine, bright days occur, even on the Commander Islands—we started, a gay picnic party, consisting mostly of Aleuts and their wives or lady friends, for the small island Toporkaff, about three miles from the village. The afternoon passed pleasantly; some were out fishing, the younger members of the party were playing ball, while I was busily engaged securing specimens.

Toporkaff, which has received its name on account of its being a rookery of the Toporki, is a small island consisting of a level plateau about 30 feet above the surface of the sea, rising abruptly from a 50 to 200 feet broad sandy or rocky beach. The upper surface of the plateau is covered with a thick, hummocky sod, which in every direction is perforated by the numberless holes dug by the Toporki and used by them for dwellings in which to rear their young. Water birds were rather scarce near the island. Now and then a solitary Toporok would cross overhead in its straight flight. Evening set in and the picnic party returned. Toporki crossed the island more frequently but not in such numbers that it was thought worth while to try catching them.

The Ornithological spectacle at daybreak the following morning was quite different from what it had been the foregoing day. Hundreds and thousands of Toporki crossed and recrossed the island, coming from all directions, and disappearing on the opposite side, in order to return again and again. A wonderful sight! The black birds, with their conspicuous white face mask, the long and floating ear-tufts, bent like the horns of a ram and the large green-and-red colored beaks and red legs, looked more like fantastical creatures of the tropics than inhabitants of the less extravagant north. Their flight seemed to have no particular aim except to view and review the spot where they were going to take up their summer abode. Like black specks they rose from the horizon, heading for the island; the nearer they came the bigger they grew, until they passed over us, disappearing as specks on the other side, and when first started nothing seemed to be able to bring them out of their straight course. When passing over the upper plateau they do not rise very high in the air. The natives take advantage of these peculiarities. A piece of wide-meshed net-work stretched on a hoop, about four feet in diameter, fixed to a light pole, 10 to 12 ft. long, is the instrument used in catching the Toporki, by suddenly throwing it in the way of the bird, who flies directly into it.

When I turned out, the Aleuts were already in their places, waiting for the rush of the birds, which had not yet begun. They were scattered pretty evenly around the island, seated on the edge of the bluff. Their immovable figures, wrapped in the warm "parka," were clearly visible against the gray western sky and now with the dawning day we discern the net at their side, but, what is more surprising, each one surrounded with a small flock of Toporki. A closer inspection reveals that these are only decoys, empty skins held in position by a stick protruding between the jaws and with the other end thrust into the ground

Before long the sea and the horizon became lively with birds and soon the sky above us literally swarmed with these red-and-green-beaked, white-masked, yellow-horned masses. I only wondered that they did not suffer collision with each other during their airy sailing, for they were as thick as May-flies round an electric light.

When a Toporok crosses overhead of an Aleut he suddenly raises his net; the bird, unable to turn aside, runs into it with a clash, falls to the ground, and in a twinkling is added to the heap of other unfortunates with broken necks.

When full day has set in, this sport is at an end, as then the birds fly higher, and now comes the moment for me and my gun, for we, too, want fresh Toporki for dinner.—*Indiana Farmer.*

The Coming Man.

I am always inclined to ask, first, what may we believe to be the probable form and likeness of the coming man and his wife. I imagine that when we look back from our home in the unseen universe, ages hence, we shall see, without much doubt, a race of men differing from those of to-day as much as the man of to-day differs from his simious, perhaps simian, ancestors. The brain will be developed to meet the complex and serious taxation of a more complex and trying civilization; the vital powers will be intensified; the man, reducing the powers of nature still more completely to his service, will depend less upon the exertions of his muscles and they will be correspondingly and comparatively less powerful, though they will probably, nevertheless, I imagine, continue to grow somewhat in size, as they unquestionably have grown since the middle ages; the lungs must supply a ration to a larger and more rapidly circulated volume of blood, richer in the phosphatic elements especially needed for the building up of brain and nerve; the digestion must supply its nutriment in similarly increased amount and altered character and composition; the whole system must be capable of more rapid, more thorough, and more manageable conversion of the energies of the natural forces to the uses of the intellect and the soul which inhabits it.

If so much be granted, it is easy to see something of the nature of the change in the physical man that must gradually take place. The brain will enlarge in its anterior even more than in its posterior parts and the great forehead will probably overhang a heavy but mobile face, having a god-like intelligence of countenance; with eyes large and prominent; with large nostrils; with a set of jaws at once fitted for the reduction of grain foods to pulp and to give basis for muscles capable of expressing great ideas by word and by play of feature. The chest will be large; the lungs capacious and free in operation, promptly self-adjusting to all demands and all variations of demand and fitted to aerate enormous volumes of fluid flowing in from the veins. The digestive organs will necessarily be suited to develop and apply phosphatic nutriment of grain and fruit foods; the liver, and spleen especially, producing those fats which make the main part of brain and nerve tissue—the abdomen thus growing with the lungs. The limbs may probably be longer; smaller in proportion to the rest of the body, as to weight at least; though we may presume that this change will be made with positive gain in grace and general power. A more generally intelligent race will pay more attention to the preservation and cultivation of the physical powers by exercise and every sanitary device and this will unquestionably aid in the development of a noble physique. The coming man will be tall and free and lofty of carriage as will befit a being full of noble and lofty thoughts and high aspirations and his progress toward the infinite in all that is good and great will be commensurate with his enobled powers of body and mind.—*North Am. Review.*

American Tin.

PITTSBURG, March 5,—The first block of tin produced from an American tin mine has reached Pittsburg. The block weighs twenty-five pounds and was taken from a tin deposit near Hermosa, S. D., by the Glendale Tin company. It has been examined by experts who pronounce it excellent.

The above item confirms the statement of Mr. Fred'k McIntosh, regarding the Tin mines of Dakota. In the last number, by a slip of the pen, an error crept into our abstract of Mr. McIntosh's remarks; it should read: In the Cornish mines the ore produces ½ of 1 per cent. of Tin, whereas the Dakota mine products furnish 6 per cent. of Tin; instead of 60 per cent.

Humble Bees Make Clover Seed.

An Indiana farmer, who told his boys to burn every Humble bees' nest they found on the farm, and who was complaining of the failure of his clover seed crop, was surprised when Maurice Thompson, the Naturalist, said: "That is why your clover seed fails you. Humble bees make your clover seed." It is a fact that a strong nest of Humble bees in a big clover field is worth twenty dollars to the owner; for these insects are the chief agents in fertilizing the blossoms, thereby insuring a heavy crop of seed.—*Ex.*

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Concluded on sixth page.

Meteorites in Kansas.

PROF. Cragin, of Washburn College has returned from Kiowa County, and is much elated over the success of his trip, he having brought back with him the fragments of a rare and valuable meteorite, the largest known to have ever fallen in Kansas. The largest piece is about the size of a small Kansas pumpkin, and weighs 466 pounds; the next peice is about the size of a fair-sized Kansas sweet potato, and weighs 350 pounds. A few hours after Prof. Cragin had concluded negotiations, a professor of geology, representing an eastern college, arrived on the ground, and not knowing of the completion of the transaction, offered the gentleman on whose farm it was found a high price for a portion of the meteorite. There was in all about 1, 300 or 1,400 pounds, and of this Washburn College gets between 1,000 and 1,200 pounds, some portions of it having been previously carried off.—*Ex.*

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THE Rockland Opinion, claims that the granite shaft recently quarried by the Bodwell Granite Co. in Vinalhaven, is the largest mass of stone ever quarried on the earth, and if erected will be the highest, largest and heaviest single piece of stone now standing, or that ever stood so far as there is any record.

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Slaughter of Animals for Fur.

The editor of *Forest and Stream* finds by refering to the report of the fur crop for Maine during the past winter that 236 Bear, 22,000 Muskrats, 9,500 Skunks, 5,300 Mink, 900 Coons, 3,250 Foxes, 730 Sables, 71 Fishers, 96 Otters, 176 Lynx, 5 Silver Foxes, 9 Cross Foxes, 950 House Cats and 75 Wildcats were caught and killed. Alter a little figuring he finds that the state produces one Bear to 140 square miles, one Muskrat to 1½ square miles, one Sable to 45 square miles, one Skunk to 5 square miles, etc.

One Skunk to five square miles is sprinkling them around pretty thick, but over in Missouri they grow five to the square mile.

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Kansas City, Mo.

The Anterior Arts.

By "Ictinus,"

[Concluded.]

I have tried to show how a barbarous people may possess highly developed arts; how the influence of art is felt in a human work; how art may dwell in a cave, yet be excluded from a cathedral: it remains to be shown, the social conditions under which the arts are best developed. This is a topic which does not directly relate to our subject; at present we note the general principles.

The arts have been cultivated to maturity and have fallen into decay under all forms of government, under the mysterious rule of the Egyptian priests; under the uncertain law of the Greeks; under the administrative government of the Romans: under the anarchical republics of Italy and under the feudal yoke of Mediæval times. That which is known to us as form of government, consequently, has no material effect on the development of art. Art is developed to the highest degree when it is associated with the people and is allowed to express their sentiments; but when excluded from the multitude, so as to form an institution distinct from them, then art declines, gradually becomes confined in the museums or academies and, finally, assumes a dialect and manner of expression no longer understood by the people. Then art becomes a visitor, entertained only on special occasions, and almost unknown to the nation. Art died among the Greeks when their genius was suppressed by Roman bondage, "and when they wished to build in Athens, monuments after the manner of those built in Rome."

All primitive men were endowed with nearly the same power of artistic invention; they all expressed a certain amount of artistic instinct. The primitive artist or architect was not a student but a close observer. He possessed himself of all the advantages of a social state whose simple mechanism was always before his eyes. Thus, the Egyptians, the Eastern and Western Greeks and the Etruscans, whose monuments are familiar to us, give evidence in their arts of an observation of gesture so exquisite as to defy all modern effort. This peculiarity we again observed in the West, during the Twelfth Century. The French sculptors and painters of that era, though they had not taken art lessons before the vases of Etruria or Greece or before the basreliefs of Memphis or Thebes, followed the same principles as did the artists of antiquity. This coincident arises from the fact that all these artists obtained their results from one true source. Gesture can be reproduced or expressed in art when it is the exponent of a simple sentiment; and sentiment is simple only among primitive men. A modern practitioner of art speaks of style and seeks for it, sometimes among a people who, from the nature of their existence, do not comprehend what style is; for our modern civilization is so complex and intricate as to make it almost impossible to express sentiment by gesture; our simplest and most powerful sentiments being an embodiment of confused ideas, of a numerous, heterogeneous people. Now the primitive art craftsman expressed his simple sentiments by means of gesture, with perfect ease. We invariably find the most strongly marked styles in the arts of the greatest antiquity.

Gesture may be applied to the whole domain of art. A painter can produce as much emotion by means of his brush as an orator can excite by means of the combined eloquence of thought and action. The same may also be said of the musician and the sculptor. An architect can erect a temple to a mythical divinity with whose attributes he is familiar, and by employing certain architectural forms and combinations, together with painting and sculpture, give expression to those attributes. He can thus make it possible for his fellows to read character in stone. But to build a temple to the true and only God is a more difficult task; to successfully accomplish it is to achieve the greatest victory of mind over matter. For how can he erect a structure to the honor of Him who presides over all; to him in whom all things are united? He is the beginning and the end of time; He is space. How can we build a dwelling for Him who is everywhere? how make it understood that a structure is the house of God? The Mediæval architects accomplished this task with wonderful success; they made the Christion church an exponent of creation, as it were; they expressed in it, as in an epic of stone, all things in the visible and invisible order of creation.

In conclusion; we should not be hasty, but consider well before denouncing as barbarians, those who have preceded us in the arts. We live in the evening of the great art day. Art passed its zenith of perfection during the sway of other nations. Yet, we should not despair of the present while thinking regretfully of the past. The past cannot be recalled, but we should study it carefully and earnestly; not that we may revive, but that we may understand and be made wise by it. We should not impose on our own age a reproduction of Antique or Mediæval forms of art for they are the expressions or exponents of the ages in which they were developed. The civilization of the Nineteenth Century is altogether different from that of the Greeks, the Romans and the people of the Dark Ages. As the civilizations are unlike, their exponents, the fine arts, are unlike and it would be equally as appropriate to reproduce the one as to reproduce the other. The fundamental laws which directed the arts of the past are true and unchangable for all time. Then we should try and submit ourselves anew to them. We should examine how our early fathers translated these laws by forms which were the real art expressions of their respective times; and then, with the best wisdom of experience and by the aid of precedent, let us freely proceed in what we may justly call "the path of progress" in art.

A Natural Salmon Trap.

The Salmon, the cousin of the Trout, is famous for its methods of going up stream; it darts at falls ten or twelve feet high, leaps into the air and rushes up the falling water in a marvelous manner. So determined are the Salmon to attain the high and safe waters that in some localities nets are placed beneath the falls, into which the fish tumble in their repeated attempts to clear the hill of water. Other than human hunters, moreover, profit by these scrambles up hill. Travelers report that on the banks of the upper St. John river, in Canada, there was once a rock in which a large circular well, or pot-hole, had been worn by the action of the water. At the Salmon season this rock proved a favorite resort for bears and for a good reason. Having a special taste for Salmon, the bears would watch at the pot-hole and as the Salmon, dashing up the fall, were thrown by its force into the rocky basin, the bears would quickly scrape them out of the pot-hole, and the poor Salmon would be eaten before they had time to wonder at this unlooked-for reception. The Dominion government finally authorized a party of hunters to destroy the pot-hole and thus break up the bears' fishing-ground.—*Ex.*

A Slaughter of Humming Birds.

A New Jersey paper says: "Recently a Humming bird's nest was found by some persons who had sufficient natural curiosity to overcome their compa s'on, and who captured the nest, two young hummers and the old one, took them home and had them stuffed. They are to be sent to a museum of natural curiosities in London. The nest is built on a small twig and is scarcely the size of half an English walnut. Both nest and twig are covered with little patches of lichen, until it is almost impossible to tell one from the other and the nest looks like a kind of natural excrescence on the twig. The nest is pliable, like a tiny cup of velvet, and the inside is lined with a white substance as rich and soft as white silk. The little birds are about the size of humble bees, very pretty, and they sit on a little perch just outside the nest, with open bills, while the old bird hovers over them to feed them."

Extermination of the English Sparrow.

Guest, at the Midland,—"Waiter, bring me some Rice birds."

Waiter,—"Yes, Sah. D'rectly, Sah." (To the chief cook, some seconds later) "Lively, now. Hustle up them English Sparrows."

The Naturalist

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KANSAS CITY, MARCH, 1890.

WE have just returned from a double funeral. We do not feel particularly sorrowful, except for the little printers, whose hungry wail we even now hear in imagination. Their paternal sire was typo and proof reader for the article in the January NATURALIST, which announced Garrett Mallerby as Vice-President of the A. A. A. S., when it should have been Garrick Mallery. The Col. calls our attention to the error, and very kindly sends us a copy of his address, which is reviewed elsewhere in this paper.

THE special arrangement which we have made with the *Cosmopolitan* presents very unusual inducements. That magazine, although only in the tenth month under its new management, is already recognized as one of the most interesting publications of the day. It is seeking subscribers everywhere and obtaining them. The proprietors believe that the *Cosmopolitan* has only to be examined to secure a permanent subscriber. That is why we are enabled to make, if the offer is accepted before January next, such a very low rate, by which our readers can obtain the *Cosmopolitan*, which is better than many $4.00 magazines for $2.40, including Vol. IV. of this paper. See add. elsewhere.

MR. H. STANTON SAWYER, of Garland, Maine, is evidently a young Taxidermist bent on getting his money's worth, whether others do or not. We asked Mr. Sawyer to send his process for embalming, which he very kindly did, and we regret we cannot endorse his method as he undoubtedly expects. The instructions in question contain only forty five lines yet there are more than twenty mis-spelled words, to say nothing of dozens of other mistakes. One-half pound of his preservative can be had for 65 cents, which is enough, he states, to preserve thirty small birds, which readily sell for one dollar each and thus; "presto change," poor youths may rapidly climb the golden road to fortune.

IN view of the fact that a number of people are advertising various embalming compounds as their special methods and are sending out such poorly composed and printed instructions that only an expert could understand them, we are pleased to again announce, for appearance in the near future, an illustrated article on Ornithology and Taxidermy, which, besides giving much matter pertinent to Taxidermy, will fully explain the much talked of embalming process.

MR. WILLIAM T. HORNADAY, Superintendent of the National Zoological Park, has favored us with his report on "The Extermination of the American Bison," which is referred to elsewhere in this paper. Had it not already been universally known, the careful perusal of this work would force the most careless reader to credit Mr. Hornaday with being a Naturalist of no mean calibre, a close and accurate observer, an instructive and entertaining writer an ardent yet merciful hunter and one of the best Taxidermists in the country.

MENTION is often made of the mineral wealth of Missouri. A report showing the amount sold in one week, ending Jany. 25, '90, in a limited territory, Joplin and vicinity, is as follows:

Locality.	Zinc ore lb.	Lead ore lb.	Value.
Joplin,	679,580.	97,250.	$10,926
Webb City,	602,330.	98,490.	9,948
Carterville,	409,200.	54,230.	6,486
Zincite,	261,920.		3,405
Lehigh,	43,100.		603
Carthage,	170,500.		5,093

Within the last year a number of mining experts and Geologists have visited the localities in Jasper and the adjoining counties, as far east as Howell county, and report large bodies of ore. A new feature of the Zinc ore business is that of having an assay made at or near the mine, thus enabling the miner to determine the market value of the output.

THE following statement has appeared in several of our exchanges of late: "that no less than six species of our birds have become extinct during the past ten years, caused principally by the English Sparrows." That is, we think, putting it a little strong and before the article is quoted further its originator should stipulate the species he has in mind. "The Sparrow exercises an important and most harmful influence on our native birds.** we know positively that there have been marked changes in the numbers and kinds of birds visiting certain districts** that it is impossible to attribute these changes to the influence of the Sparrow** but the fact that ALL disappearances of native birds from town or county cannot be charged to the Sparrow, in no way lessons its responsibility for such changes as it unquestionably has caused." etc. No mention is made of any species being exterminated nor is such an idea entertained, so far as we can discover, in Bulletins issued by the U. S. Department of Agriculture, which discusses the English Sparrow at length. What object anyone can have in circulating an untruth is beyond us. The truth, in this case, is bad enough and makes the English Sparrow a criminal in the eyes of all, but don't say it has caused any bird to become extinct unless you are prepared to name the species.

DURING the discussion as to the proper place for the location of the World's Exposition in 1892, THE NATURALIST favored Chicago and predicted that the same push, energy and business tact, manifest in all undertakings of the young western giant, would bring about success; the selection of Mr. Edward T. Jeffery, the widely known and honored executive, as Director, aided largely in the final result. The European countries have evinced a great anxiety to know what the outcome would be and the *Engineering* of London, requested their New York correspondent to state the leading arguments in favor of New York and made a like query of Mr. Jeffery, of Chicago. The New York correspondent states that his first impulse was to decline on the ground that "an axiom was a self evident proposition" and proceeds to belittle and ridicule Chicago in a most unfair manner and by so many odious comparisons almost obliterate the strength of his arguments. Mr. Jeffery takes up the cause of Chicago and presents to the reader, in a concise and masterly manner, an array of facts and figures, carrying to the unprejudiced mind, the conviction that Chicago is the proper place. The entire absence of any attempt to detract from the importance of New York and the impartial acknowledgment of that city as the great seaport metropolis, is in striking contrast with the invictive so unsparingly heaped upon Chicago. Under the wise and able direction of Mr. Jeffery, we predict an exhibition creditable to the country.

FROM time to time we have refered to Prof. Davie's forthcoming work on Taxidermy, several pages of drawings of which were submitted to us more than two years ago. Prof. Davie promises to send the fifty taree pages of India ink drawings in a few days, when we will speak of them at length. It was originally intended to be published in twelve monthly parts, at $1 00 per part, but if Mr. Davie can secure 500 *bona fide* subscribers at $5.00 per copy, the work will appear complete in one royal octavo volume, in September of this year. The work has been purely a labor of love with the Prof. and he should receive liberal support from the Taxidermal Profession. The work will be printed on the press of a leading N. Y. publisher, the engravings on plate paper, and all neatly and tastefully bound in cloth and gilt, with uncut edges and gilt top and will be known as the *Edition de luxe*. The plates of themselves are so exact and explicit that there is little need for text, yet opposite each plate will be a concise description which will enable immediate reference in case further explanation is necessary. The work will describe the skinning and mounting of birds with variations; making scientific skins; softening and relaxing skins, time required; mounting with wings spread; new method for long-necked birds; caring for dry mammal skins with full instructions for mounting their skins, fresh or dry, moulding in clay, etc. We sincerely trust that all interested in this grand work who have not already subscribed with the Prof. will send for blanks and place an order at once, for, should he not receive the 500 subscriptions above refered to, the book will, of necessity, appear in the expensive monthly parts. For further particulars address Prof. Oliver Davie, Columbus, Ohio.

MR. S. A. MILLER, of Cincinnati, Ohio, very aptly states in the preface to his North American Geology and Palæntology, a copy of which he very kindly sent us and which is noticed elsewhere in this paper, that "a general knowledge of Geology is porbably of greater importance to the people of the United States than a like amount of information in any other department of natural science; but every one will admit the state of learning in this branch is not of a high grade. There is a common complaint among well informed people who have given Geology no special study that the language used is technical, the names long, difficult to understand, and not unfrequently bear upon their face the evidence of affectation, as if those coining the words had attempted to make them as obscure as possible. It is a fact, however, that technical names are absolutely essential to a correct understanding of every branch of Natural History; and when the system of nomenclature is once learned the names are readily understood, and much more easily remembered, than the arbitrary names of individual things possibly can be". It is the desire and aim of the editor of this paper and those associated with him that THE NATURALIST may be of some considerable help to the class of people to which Mr. Miller refers in his preface. While necessarily to some extent technical, it will contain a fair proportion of matter of a popular character which we trust will prove of interest alike to the amateur and Naturalist.

An alloy prepared from finely divided copper, mixed with sulphuric acid and mercury, has been found to adhere to glass with such remarkable tenacity that it can be used as solder. It is prepared for use by heating and kneading, at which time it is as pliable as wax.

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Regular meetings for the next six months occur on the following dates: April 8, 22; May 6, 20; June 3, 17; July 1, 15, 29; August 12, 26.

MEETINGS UNTIL FURTHER NOTICE AT 908 WYANDOTTE ST.

With President Walters in the chair, the meeting was called to order at 8.30.

In the absence of the Secretary the reading of the minutes of the last meeting was omitted and Mr. Dawson elected *pro tem*.

After the usual amount of routine work, the special membership committee reporting favorably on the name of Elea Luboschez, he was elected a member of the Academy.

The Corresponding Secretary reported a communication from the Hon. John C. Tarsney, who promised to take necessary steps toward securing all scientific government publications for the Academy. The Librarian reported the receiving of a number of publications, the 4th, 5th, and 6th Geological Reports being the most important. A complete list will be given at the proper time.

The President refered to the invitation from Mr. Evans to visit his farm for the purpose of opening an Indian mound. It was decided to arrange for this at the next meeting.

After remarks regarding formation of a state Academy, a motion was carried instructing the Corresponding Secretary to call the attention of the scientists of Missouri to the necessity of such an organization. The meeting adjourned at 10.30 p. m.

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Continued frm 3rd page.

Lytton. 2 East Lynne. Wood. 1 Ethics of the Dust and Joy Forever. Ruskin. 2 Five Weeks in a Balloon. 1 Five Years Before the Mast. 6 Felix Holt. Elliot. 1 From Year to Year. Cary. 1 File 113. Gaboriau. 1 Faith and Unfaith. "The Duchess." 1 Green Pastures and Picadilly. Black. 4 Guy Mannering Scott. 4 Grimm's Fairy Tales. 2 Great Expectations. Dickens. 2 Goldsmith's Poetical Works. 3 Goethe's Poetical Works. 2 Grandfather's Chair. 4 Gulliver's Travels. 1 Heros and Hero Worship. 1 Henry Esmond. 1 Heart and Science. 1 Harry Lorrequer. 2 Half Hours with Great Story Tellers. 4 Heart of Midlothian. 1 Hours with the Bible. 1 Homer's Odyssey. 1 Hugo's Poetical Works. 5 Ivanhoe. 3 Imitation of Christ. 1 Is Life Worth Living? 1 In Peril of His Life. 1 Ioun Stewart. 4 Jane Eyre. 1 Jack in the Forecastle. 1 Joe Miller's Jest Book. 1 King Arthur. 1 Kenelm Chillingly. 4 King Solomon's Mines. 1 Catherine Walton. 1 Kenilworth. 1 Keats. 1 Love Works Wonders. 1 Lady Branksmere. 1 Ladies' Family Physician. 5 Ladies' Etiquette. 1 Lalla Rookh. 1 Longfellow's Poems. 2 Mysterious Island. 1 Madcap Violet. 1 Mrs. Geoffrey. 2 Milton's Poetical Works. 1 Mrs. Browning's Poems. 2 Mill on the Floss. 1 Mystery of Orciva. 2 Macleod of Dare. 1 Midshipman. 1 Meredith. 1 Moor's Works. 2 Molly Bawn. 1 Margaret and Her Bridesmaids. 1 Needles and Brushes, Embroidery and Fancy Work. 6 Oliver Twist. 2 Our Mutual Friend. 1 Old Myddleton's Money. 1 Outre Mer. 2 Perfect Etiquette. 2 Phyllis. 1 Portia. 1 Phantom Fortune. 5 Poe's Tales 3 Poe's Poetical Works. 9 Robinson Crusoe. 5 Rob Roy. 1 Romola. 1 Rienzi. 1 Red Gauntlet. 1 Richard Hurdis. 1 Repented at Last. 1 Red Eric. 1 Rory O'More. 2 Rob't Brownings Poems. 2 Scottish Chiefs. 1 Shakespeare (3 cts. additional postage). 2 Sketch Book. 2 She. 1 Salt Water. 1 Sesame and Lilies, etc. 1 Shelley. 1 Schiller's Poems. 1 Sunrise. 1 Shannon Bells. 3 Scott's Poetical Works. 1 Sunshine and Roses. 1 Sartor Resartus. 1 Shadows and Sunshine. 1 Strange Adventures of a Phaeton. 1 Southward. Ho! 1 Stoddard Readings and Recitations. 2 On a Town. 1 Thrilling Scenes Among the Indians. 1 That Beautiful Wretch. 2 Fire Brigade. 1 The Parisians. 3 True Stories From History. 1 The Secret Dispatch. 1 Tales From Spanish History. 1 The Scout. 3 Tom Brown's School Days. 1 The Pilot. 1 Two Years Before the Mast. 1 To the Bitter End. 1 The Cruise of the Black Prince. 1 The Guilded Clique. 1 The Pilot. 1 Three Feathers. 1 The Wigwam and Cabin. 1 Under Two Flags. 2 Vanity Fair, 1 Wesley's Poems. 4 Waverly. 2 Wilfred Cumbermede. 3 Whittier's Poems. 1 History of France.

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Book Reviews.

Books reviewed or announced in these columns can usually be obtained at regular rates, through the Editor of this paper.

A Popular Treatise on the Winds, by William Ferrel, M. A., Ph. D. John Wiley & Sons, New York, publishers. In a former number of THE NATURALIST, a sketch of the life of this eminent scientist and a complete list of his publications was given. Most of Prof. Ferrel's works are strictly technical and not adapted for the general reader. In the work above mentioned, however, this branch of Meteorology is explained with great clearness and we would reccommend to the active man of business, too much engaged to wade through columns of figures, this book as giving, in a condensed form, a clear idea of the principals underlying the atmospheric movements. Prof. Ferrel adopts the axiom that explanation must accompany observation and theory follow fact and points out the physical processes of Meteorology. That the work has been long needed by the scientific world is attested by the glowing criticisms of leading journals of the day, more especially the Meteoroligical journals. These journals all agree in voicing the sentiment of the great worth of the material given. In the notices we have seen no mention has been made of one of Prof. Ferrel's greatest discoveries, namely: the explanation and modification of the now known and recognized Boys' Ballot law, which is as follows: In consequence of a deflecting, for a depending area upon the earth's rotation, there is a pressure of the air in the Northern Hemisphere to the right of direction of motion, which drives the air to the right hand and causes a heap ng up or accumulation on that side, as the wind generally blows around some central area; this causes an outer area of low barometer on the left hand side, but as the wind inclines inward a little on all sides toward the centre, this causes the lowest barometer to be a little in front of the left hand, when the back is toward the wind. In the Southern Hemisphere the right hand must be used instead of the left and vice versa. The book contains 500 pages, is illustrated and has a full and comprehensive index.

North American Geology and Paleontology, For the Use of Amateurs, Students and Scientists, by S. A. Miller. Press of Western Methodist Book Concern, Cincinnati, Ohio. 1889. Cloth. $5.00. 664 pages, of which the first one hundred are devoted to definitions and laws of Geology, Stratigraphical Geology and the laws of Nomenclature. Of the following pages, 528 define all Palæozoic fossil genera that have been characterized, illustrating most of them and also cataloguing all species which have been described, with a reference to the author, places of publication, including page references and the group of rocks in which each species occurs. There are 1194 illustrations and in many instances several figures are used in illustrating some species. All Classes are briefly defined with the view of contrasting Palæozoic Zoology with the living. The glossary covers 25 pages and fullly defines all specific names and technical terms. The index to the genera occupies nearly ten pages, three columns to the page and in addition to alphabetically indexing all the Palæozoic genera in the work and placing in italics those which have been used, but do not belong to North America, the gender of each genus is designated with *m* for masculine, *f* for feminine and *n* for neuter.

Referring again to the fore part of the book; the definitions and laws of Geology are included in Chapter I. Chapters II to XXXVIII, both inclusive, describe the various Geological systems and groups, while Chapter XXXIX handles Nomenclature, from which we learn that it is of the highest importance that we retain the first defined and illustrated names of genera and species; that the tendency of the science of Palæontology is to demand, in all cases, both definitions and illustrations before the publication is to be recognized and good authors refuse to recognize names unless their meanings may be readily comprehended; that a species is not to be considered or named unless both generic and specifics are simultaneously applied to it and that, to have a name and place in science, publications must be in other than some obscure organ, which does not reach the students of science generally.

The want of such a work has been long felt and Mr. Miller certainly deserves the heartiest thanks and support from the Geologists of the world, more especially so as he has made it possible for every one interested, to own the work, the price being only five dollars.

The address of Garrick Mallery, Vice-president Section H of the American Association for the Advancement of Science, delivered at the Toronto meeting, has been received. It is a well written parallel in planes of culture between the Indian and Israelite. The word Indian being synonomous with the aboriginee of the U. S. and Israelite designating the whole nation.

It is in pamphlet form, covering 46 pages, treating of the origin, religions, practices, parallel myths, sociology, etc. of the Indians, summing up in a four page conclusion some strong points upon the race question as measured by the several planes of culture and specific environments. The author is evidently a student and a thinker, and if he does not grasp the whole truth from that oldest of histories, the Bible, he certainly derives a very large and profitable part.

The great state of Kansas, in many respects is progressive and aggressive, yet lacks a most important branch of state work and should emulate the example of the great state of New York, whose legislators recognize the economic value of a well sustained Geological survey. The work undertaken by private enterprise has developed the Coal and Salt mines and shows the value and extent of the beds of Gypsum; yet such work fails to bring into general notice the resources of a state and does not carry that weight, usually accorded a state survey. This dearth of authentic data is partially met in Vol. XI of the Transactions of Kansas Academy of Science, for 1887 and '88. This publication of 127 pages, covers a wide range of Geological, Zoological and Botanical research and embraces a variety of subjects of scientific value. The general excellence of all the contributions is so high that it is a matter of some difficulty to refer to all the articles which would interest our readers. Prof. Robert Hay, whose attainments have been recognized by the U. S. Government, treats of the Dacota Lignite; some idea of the extent of his observations may be gained, if, with the map of Kansas before him, one marks out the localities named. Dr. E. H. S. Bailey presents a set of exact tables, showing depth of strata and composition of the Salt beds, in Ellsworth county, and a suggestive comparative analysis of Salt in other localities, foreshadows the future importance of this great industry. Mr. N. S. Goss adds many valuable and interesting facts on the subject of Bird life and migration. Mr. W. R. Lighton's Notes on the Circulation of Sap takes the typical Kansas floral representative, the Sunflower, and brings out some curious facts. Prof. F. H. Snow, of the University of Kansas, in reporting

on the Logan county Nickle mines deals wholly with facts, ignoring the time-serving cry; "anything to bring capital into our state." The reader, in following the facts so succinctly stated, must agree that "these deposits are not suitable for mining, for the quantity of nickle dust is too small to warrant the expectation of any returns upon the money invested." Mr. A. B. Baker in the list of Mammals of western Kansas, mentions a Prairie Dog town of more than sixty miles in length and says much damage is done to the crops. The advance guard of the *Lepus campestris* (White-tailed Jack Rabbit) and *Lepus-callotis, texianus* (Black-tailed Jack Rabbit) have passed eastward and are now noted as numerous in Kansas. Mr. W. T. Swingle, Ass't Botanist, Kansas Experimental station, contributes a list of species of *Peronosporaceae*. The date of the appearance of this blight or mildew on the varieties of Grape and other plants, is of vital interest to the Horticulturist. The artificial key to the Kansas grasses by Dr. W. A. Kellerman, of the state Agricultural College, gives to the Botanist a valuaaddition to their places of growth and classification. Want of space compels the omission to notice, at this time, other interesting articles, but enough has been said to demonstrate that Kansas contains within its borders a body of trained, scholarly men, fully able to undertake a systematic survey under state patronage. We are indebted to Mr. B. B. Smyth, librarian, for a copy of the work above mentioned.

The Extermination of the American Bison, by William F. Hornaday, sup't. of the National Zoological Park. Government print. 1889. 181 pages with IV pages of index. A double page frontispiece, 21 full page plates, 1 sketch map and a map of North America, 18x24, illustrating the extermination of the Bison. Being a portion of the National Museum Report, 1886-'87. The work before us gives the life history of the Bison, as far as known. The probable date of discovery of the species, Geographical distribution, abundance, character, food and economic value, with a list of Bison herds and individuals now in captivity, omitting, however, the herd at Chelsea Park, this city. Part II speaks of the causes, methods, progress and completeness of the *wild* Buffalo's extermination. Part III is a description of the Smithsonian expedition in quest of representatives for that institution, which resulted in a total catch of twenty-five head, which included 10 old bulls, 1 young bull, 7 old cows, 4 young cows, 2 yearling calves and 1 three month calf, which was caught alive but died in captivity. From these specimens the huge group of six choice Bison, of both sexes and all ages were selected. They are mounted with natural surroundings and displayed in a superb mahogany case 16 feet long, 12 feet wide and 10 feet high. The Washington *Star*, after describing the surroundings, says: "In front of the pool, as if just going to drink, is the huge Buffalo bull, the giant of his race, the last one that was secured by the Smithsonian party in 1888, and the one that is believed to be the largest specimen of which there is authentic record. Near by is a cow eight years old, a creature that would be considered of great dimensions in any other company than that of the big bull.***It is around the big bull that the romance and main interest centres.***It seems as if Providence had ordained that this splendid animal, perfect in limb, noble in size, should be saved to serve as a monument to the greatness of his race, that once roamed the prairies in myriads. Bullets found in his body showed that he had been chased and hunted before, but fate preserved him for the immortality of a museum exhibit.*** The group was mounted by Mr. Hornaday, assisted by Messrs J. Palmer and A. H. Forney.***This group, with its accessories, is, in point of size, about the biggest thing ever attempted by a Taxidermist and is regarded as a triumph of the taxidermal art. It tells in an attractive way, to the general visitor to the Museum, the story of the Buffalo, but care has been taken at the same time to secure an accuracy of detail that will satisfy the critical scrutiny of the most technical Naturalist."

Magazines Received.

The Exchangers' Monthly. Vol. V, Nos. 1, 2, 3, 4 and four copies of No. 5. 25cts. per annum, 3cts. per copy. Thos. Chamberlain, Jr., Jersey City, N. J. Publisher. Contents for March: A Trip Through Mexico, Yttria and Thoria Minerals from Texas, Petrifying Spring, Exchanges, Opening of a Pyramid and Geology.

A Fish Story?

The *Trade Gazette* states that a farmer in Dakota, while driving home from town, had an eagle light on his shoulders and undertake to get away with him. After a hard tussle the bird was overpowered, tied up with the lines. Returning to town, the farmer sold the bird to get money to bring his family to Dakota. It was caged with the intention of jubileeing when the territory became a state.

The *Gazette* should have an Ornithologist identify the specimen and give further details of the rather doubtful story.

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MR. L. S. FOSTER is anxious for information as to the winter home of the Snowy Owl (*Nyctea nyctea*), His address is New York City.

The Naturalist.

VOL. IV. KANSAS CITY, KANSAS, APRIL, 1890. NO. 9.

Major Powell Condemned by the Press: Criticisms by Prominent Scientists.

His Views not Endorsed by the Leading Archaeologists.

Representatives should Oust all such "Official Humbugs."

In the December, 1889 issue of this paper we published an article on "Antiquity of the Mounds" from the able pen of Mr. Warren Watson, of Kansas City, Mo., in which he justly censured certain "official" scientists connected with the Smithsonian Institute, for the part they are taking in disseminating, at government expense, their own preconceived ideas which are unsupported by facts, and entirely contradictory to the ideas advanced by all not connected with Powell, who have investigated the subject of the "official" scientists to which we have above referred.

Among the many letters received endorsing Mr. Watson's stand was one from Jno. H. Frick, Prof. of Mathematics and Natural Science at the Central Wesleyan College of Warrensburg, Mo., from which we quote the following: "I wish especially to commend the article, "Antiquity of Mounds." I think it a downright shame for these men to twist the facts to suit their preconceived ideas. The address of Garrick Mallery on "Israelite and Indian" is another of the same sort. It is a piece of the most monumental assumption and impudence I ever saw or heard of and cannot fail but be of discredit to science."

In the February NATURALIST appeared the second article from Mr. Watson in which he comdemns Maj. Powell for his ungentlemanly, untruthful and sneering attack upon the *authenticity* of the Elephant Pipes in the Museum of the Davenport Academy of Natural Sciences. The Davenport *Democrat* under date of March 28, refers to the matter and quotes copiously from the article.

The St. Louis Republic says: "Mr. J. W. Powell, the chief of the government's bureau of alleged ethnology has taken occasion to renew the war in which he involved the United States against the Davenport Academy of Sciences some years ago. He is again heading the federal government for an attack on Davenport, its elephant pipes—pipes which he attacked at government expense in a government puplication. In reviewing his renewal of this attack, the Kansas City NATURALIST says: "It is not too severe under the circumstances to say hat the greater portion of it is untrue and that Major Powell knew it to be so."

It is entirely praiseworthy in Davenport to have an academy to promote science at private expense, and we dare say the least scientific of its members is just as scientific as Mr. Powell, if not more so. But Mr. Powell is not willing to allow any claim to science which he has not specially indorsed beforehand. So, when the Davenport academy, in grubbing around in Indian mounds, found a couple of pipes shaped like elephants, with well-defined tails and trunks, he took occasion to commit the United States government to the contention that the members of the Davenport academy were ridiculous ignoramuses, and that their elephant pipes were not shaped like elephants and were forgeries at any rate, this when he had never seen the elephant pipes or even a picture of them. The Davenport academy promptly issued fully authenticated pictures of the pipes, but they had no redress, for Powell had the entire government against them, and used it in the effort to make ridiculous all efforts of Iowa to advance the cause of science.

There was no other occasion for this than his feeling that the salary he draws as chief of the official ring of alledged scientists entitles him to abuse and discredit all who are not members of the clique. The elephant pipes were private property. They had well-defined tails and trunks, and were not offered for sale to the government. They were therefore none of Powell's buisness and none of the government's buisness. If, after the people of Iowa have paid their tariff taxes and economized by burning their corn, they have anything left to advance the cause of ethnology, it is their affair. If their elephant pipes had neither heads nor tails; if they looked more like dodos than the well defined elephants they do look like, they would still have a right to put them in their collections and write learned and scientific disquisitions on them. This is a great country, and Mr. Powell is one of the greatest official humbugs in it, but he must learn to confine his humbuggery within bounds. If all the scientists of Iowa were humbugs, they would have far more right to humbug unmolested than he has, for he costs the tax-payers of the country a great deal of money."

The remarks from our big contemporary are pointed, hitting the nail decidedly and squarely on the head.

It is probably quite out of the question for the NATURALIST to attract the attention of our Representatives or many of their constituents, to the impositions practiced by Powell and his clique upon the taxpayers of the Country; while we are willing to contribute our mite towards ridding the country of an expensive unscientific nuisance, our limited circulation precludes our doing more than a minimun amount of good. Such papers however as the *Kansas City Star*, *St. Louis Republic*, *Chicago Times* and others, have it entirely in their power to present such a mass of evidence of Powell's unreliability, untruthfulness, and misapplication of official power as to make him "shake in his boots" or "shake him out of them," entirely.

Mr. S. A. Miller is an attorney at law at Cincinnati. He is probably better known to the scientists of the country as a Palæontologist. In a recent letter he writes: "I have read the article of Warren Watson, on "Those Elephant Pipes," in reply to J. W. Powell, who unfortunately for Science and education is at the head of the Geological Survey of this country. Watson's criticism is appropriate and true. I would add, that so far as Powell's publication on the other branches of science have fallen under my notice, they are far inferior to those of his predecessors in the Geological Survey. A small mutual admiration society in Washington City, connected with a pseudo national academy, seems to assist to positions those who become members, and the rusult is a government corps of employes in matters of Natural History, so conceited and ignorant, that it is a pity their productions ever find a place in print, even though Congress cares not where the money goes so it tends to deplete the Treasury. When will our Representatives realize the imposition so patent to every student ?"

Mr. Miller is author of "North American Geology and Palæontology," is a well read and well posted man and knows what he is talking about. He echoes the thoughts of hundreds all over the country who have watched Maj. Powell's proceedings with feelings of contempt.

A New Club House at Davenport, Iowa.

The directors of the Forester Gun Club are having plans and specifications drawn for a new club house, to be erected at the park this Spring. It is the intention to have the building completed before the State tournament, which will be held in June. There is considerable discussion among sportsmen regarding the shooting of ducks at this season, the general opinion is that there should be some way adopted to stop it.—*Forest and Stream.*

The Earth a Dynamo.

The earth is a great dynamo, revolving around its axis at a peripherical velocity at the equator of more than 1,000 miles an hour.

By virtue of the dynamic action of the earth, electricity is drawn into it. As the dynamic action is largely due to its velocity, and the velocity being greatest at the equator, the dynamic effect will be greatest at that point. Hence the greatest amount of electricity will be drawn to the earth at the equator and the least at the poles.

Temperature, being the measure of molecular activity (as weight is the measure of matter) the temperature will be highest at the equator because the molecular activity is greatest at that point; and so the temperature will be less and less as we pass from the equator toward the north or south poles, because the peripherical velocity grows less and the dynamic action is diminished. The phenomena we call sun rays are produced by the electric currents drawn to the earth by its dynamic action.

Matter *per se* is imponderable and inert; it is endowned with energy by the physical forces and is thus made electrical. The different elementary bodies are endowned with energy in different degrees hence they vary in their electric capacity. The phenomena of weight and specific gravity are caused by the dynamic action of the earth drawing electricity to it and consequently drawing all matter containing electricity, and as the matter is differently endowned with electric power, the dynamic effect in drawing it to the earth will vary accordingly. We thus find that the difference in the weight and the specific gravity of matter is caused by the dynamic action of the earth.

Matter may be divided; the end of physical division is the molecule. Sir William Thompson, an expert in molecular physics, says "there are nineteen million million million molecules in a cubic centimeter of any gas." From this we learn that the particles that compose the atmosphere are infinitely small. The dynamic action of the earth drawing the electric sun current through the atmosphere forces these minute molecules into such a high state of activity that they exhibit the phenomenon we call sunlight. Sunlight being produced by the molecular activity of our atmosphere is confined to it, and darkness prevails between our atmosphere and the sun.

The electricity drawn into the earth by its dynamic action increases the molecular activity of the material and as the electric currents approach the center of the earth they focus and by their aggregated action the molecular activity of the earth is increased to that velocity that exhibits incandescence. Thus we find that the heat of the earth is not produced nor is it sustained by the combination of fuel, such as coal, oil or natural gas, but is generated and sustained by the dynamic action of the earth.

The greatest peripherical velocity and the greatest dynamic action being at the equator, the greatest amount of incandescent matter will be found beneath the torrid zone and for this reason volcanic action will be confined to that locality.

The normal path of energy is from the higher to the lower degree of activity, hence the electricity drawn to the earth by its dynamic action passes from the higher peripherical velocity to the lower velocity near the axis and from thence out at or near the North Pole and from there to the North Star, thus producing the Northern lights and an arctic open polar sea, for the electric currrent passing out at the North Pole will put the water into such a high state of activity as will prevent its freezing, notwithstanding the low peripherical velocity of the earth at that locality.—*Jacob Reese, in Philadelphia Inquirer.*

Cocoons.

By R. R. ROWLEY, Curryville, Mo.

To the student of Entomology there is no time during the year that he may not find something interesting in his line of inquiry.

The Lepidopterist is on the alert as soon as the icy fetters of winter are broken and the first faint odor of blossoms is abroad on the breeze. Patiently he watches through the warm hours of midday beneath the blooming shad bush for a clear-wing Sphinx.

In May his field of observation grows larger and he chases the "Red Admiral" and the "Swallow tail" from flower to flower. Through the summer's sultry heat he revels in a paradise of winged beauties and as autumn fades into winter he may yet take the "Doghead" the Claudia and the "Painted lady" on the fast browning clover heads. Last of all, perhaps, the Nicippe about its food plant (Cassia) and the Vanessas and Graptas at sunny places in the woods.

When, the blasts of winter have stripped the trees of their leaves and the flowers are no more, must the Lepidopterist retire to his warm study to await the advent of spring and the reanimation of nature? The beauty of the world has vanished but there are treasures suspended from the naked twigs of the Willow and the Apple and the collector goes forth with his box to gather in his stock of cocoons.

Fortunate he is, indeed, if he lives near a sassafras thicket, for the pendent cocoons of *Promethea*, wrapped in a brown leaf and securely fastened to the twig, become conspicuous objects among the leafless branches.

We have often found as many as five on the same small bush.

It is rare to find cocoons of any of the large moths attached to the larger trees and, in fact, the experienced larva hunter hardly ever, expects to find a "worm" on the great maple or the giant oak. So, in looking for caterpillars or cocoons be sure to examine closely all the bushes and sprouts. In the East, *Promethea* feeds on wild cherry but not so in Missouri. Here it has selected sassafras and confines itself to that alone.

Perhaps, even more conspicuous than *Promethea* are the larger cocoons of *Polyphemus*, wrapped in leaves and suspended from the twigs of soft-maple.

The larva of this moth sometimes fails to fasten his silken house to the branch and it falls with the leaves in autumn.

Polyphemus is more of a general feeder than *Promethea* and its cocoons are found attached to the branches of oak, sugar tree, chestnut, hazel, rose bush, and occasionally walnut, but its choice of food plants seems to be soft-maple, chestnut and oak; however, as the dead leaves of the last do not fall, till the cocoon has given its imago in the spring, it offers the best collecting inducements.

The most general feeder of all the larger Bombycids is the *Cecropia* with whose great brown cocoon every body is familiar. Unlike *Promethea* and *Polyphemus* this moth fastens its pupal case about a branch or even to the body of the tree, itself, and, in spite of its great size, it is less conspicuous than the cocoon of *Polyphemus* or *Promethea*.

In looking for this insect, the most satisfactory results come from the examination of plum, apple, cherry, soft-maple willow and sassafras, on all of which the larva feeds.

A hazel thicket is sure to yield a few cocoons and the larva sometimes feeds on walnut, hickory, aspen, button bush fever wort, wild cheery and currant.

On all of the above plants except the last named, (currant) we have found the larva feeding. In confinement it will doubtless feed on many other things.

The last and most desirable of the great silk worms is the beautiful *Luna* whose larval life is spent on the walnut and hickory but as the cocoon is never fastened to the twig and falls with the leaves in October, the search for this silken treasure is usually a fruitless one.

A thrifty tree in an open space may be selected and a close search, beneath, among the dry leaves may be made but if the grass be long, the labor is in vain.

In the Eastern cities the cocoons of *Cynthia* are found attached to the fallen leaf stalk of the ailanthus tree.

The rare *Angulifera* on the tulip tree, the still rarer *Columbia* in the north on the larch.

West of the Rocky Mountains the *Gloveri* takes the place of *Cecropia* and in California the *Ceanothi* is a common moth.

The best time to search for cocoons is in early winter as great numbers of the more exposed ones are destroyed by birds

in the late winter and early spring. In fact a cocoon of *Cecropia* high in a bush is sure to furnish a meal for a "sap sucker."

The bird by patient labor forces his bill through the silken covering and feasts on the dainty juices of the inclosed pupa. A small round hole in the side of the cocoon or an oblong slit, accompanied by lightness in weight, inform the disappointed collector of the unhappy fate of the unfortunate chrysalis.

Apparently aware of their probable fate in the cocoon, many *Cecropia* larvae seek sheltered places, often spinning at the bottom of a tree, hidden in the grass, or in the hollow of a fence post or inside a shed where a woodpecker rarely ventures.

The Doll that Talks.

In Orange, New Jersey is the world-renowned labratory of Edison the "wizzard." Here, his fertile brains and wonderful mechanical ability, planed and perfected many things recognized by the civilized world as necessities. Here, some eleven or twelve years ago, the Phonograph was evolved and to-day, within almost a stone's throw, are several large buildings covering many acres in which over 500 people are at work manufacturing the commercial Phonograph and "the doll that talks."

This talking doll looks like any other doll; its body however is made of tin, the interior being filled with a mechanism resembling the commercial phonograph, but simpler and much less expensive.

The doll is made to talk by turning a crank and will repeat whatever was talked into its cylinder before it left the factory and after it has spoken everything on the cylinder, a spiral spring returns the cylinder to its point of starting when it is ready to talk the same thing over again.

The factory at present, has a capacity of about 500 talking dolls a day.

Several firms in this city have already advertised the talking dolls and their arrival is longingly hoped for by many an anxious tot.

Is Henry George a Naturalist?

In the *Standard* of April 23, we find a long editoral letter from Mr. Henry George, its proprietor, who has been disseminating his single tax and free trade ideas to large audiences in the old world and Australia and who is now, we take it, *en route* for home.

He says: "As we near the New Zealand coast we have lost the tropical warmth of water and air, but it is yet a summer breeze that is to-day curling the white caps on the sunlit sea. And though the flying fish have disappeared, the king of the sea birds, the grandest of all sailing tribes, the graceful Albatross, has come, as though to welcome us to the south. One can hardly tire of watching them. Beside their utilization of the power of the wind and the force of gravitation, all our human modes of locomotion seem painful and clumsy. A stroke of their feet, a few flaps of their wings, and they rise to the apparent power of making the air bear them where they please, as fast as they please and as long as they please, sailing down the wind or darting against it, soaring above the mastheads or all but skimming the water, now hovering in our wake, now shooting past and circling around the bow, without a single flap of pinion or anything that betokens the slightest effort."

An Old Pessimist.

The following is an extract from a communication from Jefferson Scribb in *Forest and Stream*.

He used to dream of "the time when he should start on a trip to the uttermost parts of the earth." "In his mind's eye" he slaughtered big game and carried the skins home. Year after year rolled into eternity and the trip was never made.

"And now, at sixty," said he, "there is no prospect and it's too late, now, to start. The last elephant in Africa will soon have his tusks sawed off and I could hardly reach the jungle in time to see the man-eater, dead, full of bullets. At home here, the grizzlies have become pusillanimous, even the Indians are corraled in their graveyard. The woods are speechless except for the quail, liberated by count in the spring to be shot in the fall. There's a trap in the path of every shy creature with a coat of fur, and a bounty on his scalp in the town clerk's office. In a few years more, we'll study natural history in museums, with moths corrupting rare, beautiful skins, which we now barter in bales, and wise men will gather reverently about a foot print in petrified mud where stupid men now congregate in ambush, with 'blinds' and 'batteries.'"

With the killing of Kangaroos at the rate of 711,000 a year, Australia will soon be rid of its greedy marsupials, one Kangaroo being accused of consuming as much grass as six sheep.

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The Niagara Limestone of Pike Co., Missouri.

By R. R. ROWLEY, Curryville, Mo.

In the March number of THE NATURALIST we described an outcrop of Limestone near Edgewood, Mo., which we referred to the top of the Hudson River Group. Since writing that article we have received a communication from Mr. Chas. Schuchert, of Albany, N. Y., and find he has changed his former opinion as to the Edgewood beds and, from a study of its fossils, he is now led to believe the outcrop is of the Clinton Group. True, the fossils seem to be a commingling of Trenton and Niagara forms, but we are of the opinion that the weight of evidence places this stratum at the top of the Hudson River Group. and so we shall leave it for the present.

Overlying the Hudson River Group at a number of outcrops in the county is a single stratum of from two and a half to four feet in thickness of a white or brown Oolitic limestone yielding at some places an abundance of Corals, together with a few other small fossils.

In a weathered outcrop near the Grassy creek bridge, three miles north west of Louisiana, were obtained the following fossils; *Stromatopora sp?*, *Favosites* (possibly two unidentified species), *Halysites catenulatus*, *Zaphrentis?sp?*, a small *Orthis*, two species of *Streptorhynchus*, a small *Rhynchonella*, *Nucleospira pisiformis*, *Atrypa nodostriata*, *Modiolopsis undulostriata*, a small undetermined *Lamellibranch*, a large fine *Cyclonema* like *Gasteropod*, *Calymene niagarensis*, *Encrinurus ornatus*, a *Tentaculites*, and a few other undetermined forms.

At another point, south of Louisiana, on Noix creek, a small slender *Cyathophylloid* Coral was added to the above list.

Near Dover church, ten or eleven miles S. E. of Louisiana, is a weathered outcrop where an abundance of specimens of *Cyathophylloid* Corals and *Favosities* were found loose in the clays of the ravines. A mile or two nearer Louisiana, the Oolite forms a back bone on the low hills to the east of the road. The face of this ridge or back bone is set with *Favosites* and a few specimens of a *Cyrtolites?* were found in the clay.

On the town branch in Louisiana, near the "Big spring" the Oolite is brown, but contains only a few poorly preserved fossils, being overlain by two or three feet of an earthy brown limestone in which was noticed a single specimen of *Streptorhynchus*.

On the river front above the Diamond Flouring Mills, the Oolite is a beautiful white and we have seen a single annulate *Orthocerus* from this point.

At the mouth of Buffalo creek the Oolite is white and upon it rests seven or eight feet of a yellowish clay sandstone, probably of the same age as the Oolite, but as the fossils found are an imperfect shell and a poorly preserved small Coral, no definite conclusion as to the age of the sandstone can be arrived at.

We stated above that the Oolitic forms but one stratum or layer. We wish to modify the statement a little by saying that at some of the outcrops there is an imperfect seam near the middle of the depth and when the stone is split at this suture or seam one of the surfaces is found crowded with *Cyathophylloid* Corals possibly a species of *Streptelasma*.

The Oolite when quarried is very hard and wears well as a building stone. The earthy sandstone above, may be easily worked when fresh from the earth, but becomes hard and enduring on exposure.

The New Taxidermy.

Elsewhere in this number of THE NATURALIST we speak at length of Prof. Oliver Davie's new work on Taxidermy. Don't miss reading it and by all means don't neglect to subscribe.

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KANSAS CITY, APRIL, 1890.

THE SIGNAL SERVICE forecasts for forty-eight hours in advance, have been proven correct with almost mathematical accuracy.

WE prefer to fill subscriptions for THE NATURALIST beginning with the first number of Vol. IV.

HT

MESSRS NATHAN JOSEPH and Co., of ... Francisco, Cal., have favored us with Photo. proofs of a large line of Indian goods from the Hudson Bay Country.

A prominent corner in Kansas City, Mo., attracts the attention of passers by to a display of stuffed birds, native and foreign. It is quite creditable to the average intelligence to note the remarks of on-lookers.

THE disappearance of the vast herds of Bison from the Western Plains, the cultivation of the ground and the repression of prairie fires, begins to affect the arid climate. The rain fall is increased, the heat radiates from the surface less and the average mid-day temperature is not so oppressive.

DR. WOLFE of Reno county, Kansas is an enthusiastic corn-raiser. He recently presented secretary Rusk, of the Department of Agriculture, with a half-dozen huge ears which measured fourteen inches in length. Wolfe's last year's crop was 38,500 bushels from 500 acres.

IT is gratifying to note that Prof. F. H. Snow has been chosen Chancellor of the Kansas state university and director of the museum of natural history. The regents established a chair of Geology and S. W. Williston, assistant geologist at Yale, was elected to fill it. Miss. Gertrude Crotty was chosen as assistant in Zoology.

WHO can name them? We received a copy of the March *San Louis Valley Graphic* recently, and in glancing over its well filled columns, had our attention attracted by the following: " Mr. Finch brought a pair of mountain quails down from Stunner, Tuesday, to be mounted by taxidermist Woodbury. These birds are white in winter and brown in summer. They are beauties, decidedly too pretty for the sportsman's rifle, and should be spared by the dictates of refined sympathy, if not under compulsion of law."

EARL BROS'. have a grocery store at the corner of Twelfth and Central streets. Easter morning when pulling a banana from a bunch, one of the proprietors dislodged a huge tarantula and a nest of hundreds of little ones. The customers present hustled themselves out in a lively manner, the doors were closed, the old tarantula killed and those of the little ones that did not escape were bottled. Some fear is entertained that those escaping may mature, though there is not much ground for fear of them so doing. No doubt however but the dudes of "Quality Hill " will steer clear of Earl Bros'. store for some time to come.

PROF. E. N. PLANK, the Kansas botanist, who resides at Kansas City, Kan., is writing a volume on Kansas Botany which will add many new species to the flora of Kansas. Prof. Plank says no state in the union is richer in botanical specimens than Kansas. There are over 2,000 species of flowering plants.—*Topeka Journal.*

Referring to the above item the *Times* man says: " Prof. E. N. Plank, a botanist of Kansas, asserts that there is no state in the union that is richer in botanical specimens than Kansas. The professor will have to get something better than that to tell the people before he can have his name inscribed upon the rolls of fame. Every farmer's wife who has ever gone down to the banks of the "run" to pick greens knew that before the professor announced it. "

If Prof. Plank is at all like several other scientific men with whom we are acquainted who have assiduously labored for years for the advancement of science with no thought of remuneration, it makes little difference to him whether " his name is inscribed upon the rolls of fame " or not. It occurs to us that the *Times* man was not only hard up for copy on that particular day but was just a little "fresh" as well. He probably thinks of the Kaw as a "run."

THE Editor of the *Ornithologist and Oologist* of Boston, says; " the great majority of oological collectors are honest and when they send out eggs which are not correct, it is owing to ignorance or to want of proper identification. Unfortunately, however, there are those who are positively dishonest, and whose "errors" are the result of a deliberate intention to defraud." Then he proceeds to describe a number of "errors" some of which are so palpable that the collector must either have been a great fool himself or supposed that his customers were. Fortunately we have had no such trouble nor have similar irregularities been reported by our correspondents. There is a phase of possible dishonesty we have been troubled with, however, which we wish to mention. Collectors, especially amateurs, have ordered eggs which were sent by mail, securely packed and bearing our imprint, together with postal notification. Several weeks or possibly months later we have been notified that "those eggs we ordered so and so have never reached us, please fill our order at once." During all the years we have been in business only one or two of the hundreds of packages sent us by mail have ever miscarried. Of course we are anxious to have our customers receive their goods, but when they go by mail and are lost, we cannot be responsible. There is a matter of three premiums however, that we have ready for mailing, but are unable to send for want of proper address, same having been lost by a gust of Kansas wind. If these parties will notify us, the premiums will be mailed forthwith.

STEPHEN M. ALLEN, A. M., LL B., F. R. H. S., presents, in April *Arena*, "A Newly Discovered Law in Physics." This "new law pre-supposes two primary and creative principles in nature," which he calls "Actien" and "Ether," He says: "Our sun, though its axial revolution, is constantly throwing off from its surface, through dark and cold etherial space, toward the earth, a surplus, imponderable, subtle energy or fluid, which, neither heated nor luminous on leaving the sun, passes through intervening space and enters the atmosphere of the earth, in which, through combustion, light, heat, electricity, magnetism and the gases are produced, and that the earth does not receive its light, as light or as heat from the sun." etc. etc. For untold ages science has taught us that light was the result of combustion in the sun, which flowed in a current so intensely heated that it passed through the more than 90 million miles of space separating us from the sun—space so cold that Secchi estimated it to be 18 million degrees, and still reached the earth sufficiently warm to frequently give us 110 degrees in the shade. Mr. Allen's "new law" is a radical change from the old order of things and well it is that he did not live a few hundred years ago when he and his "new law" might have been roasted. There is combustion in the sun, no doubt, but according to the "new law" has nothing to do with supplying us with light and heat, which are entirely due to combustion in the earth's atmosphere. We need no longer think of the fixed stars, including the sun, as uninhabitable fire balls. Mr. Allen's discovery, that the sun, planets and stars shine by their own inherent light, substantiated, completly revolutionizes whatever physics has heretofore taught. This new discovery will lead to others fully as important, all of which will help to harmonize the principles of nature and enable us to better understand the creative power of nature.

CUBAN and Japanese belles seem to be just about as highly civilized as the Sioux. Louis Quintana is a Cuban, bound for Japan via Chicago and San Fransisco. He has with him a number of glass jars half filled with sugar cane and lightning bugs, which were contracted for some weeks ago by an emissary of the Japanese ruler. The bugs are like those seen about here summer evenings, except that they measure two inches in length. They have luminous sparks on each side of the head that constantly glow with a subdued yellow light. The under part of the bug is also luminous, but the full beauty is not seen untill it spreads its wings. Then there is a perfect flame of golden light. The little fellows are worn by Cuban belles in the coiffure, on the corsage or anywhere that ornaments can be displayed. The bug is secured by pushing a fine hairpin down its neck. In its constant struggles to escape the wings are lifted, displaying the full glow. After wearing them at the reception or ball, the living gem is released and put under a glass jar with sugar cane. Under this treatment a bug will live over a month, retaining its bright quality all the while.

ANY person who can give information as to the present address of Prof. Elliot Crane, formerly of Grand Rapids, Mich., will confer a very great favor by communicating with the editor of THE NATURALIST.

The New Taxidermy.

We have just received from Oliver Davie, the India Ink drawings executed by Theadore Jasper from which the plates for Prof. Davie's book on Taxidermy are to be made.

Dr. Jasper is an Ornithological writer with whom every Naturalist is more or less familiar. His India Ink work is excellent and must be seen to be appreciated.

Prof. Davie, through his "Nests and Eggs of North American Birds" is an author with whom the Collectors and Naturalists of North America are favorably acquainted.

With Prof. Davie, the work has been a labor of love. The drawings have cost in the neighborhood of $1500. An edition of 500 copies will cost $2500 more.

We think it is not asking too much that 500 subscriptions of $5.00 each be guaranteed to Prof. Davie. It will not be published without. About 150 subscriptions have already been received.

When the India Ink drawings arrived, we sent postals to every one likely to be interested and besides spent two days, assisted by Mr. E. T. Keim, in showing the drawings. The results were very favorable as we had fifteen orders for our trouble.

Mr. Shaw generously consented to take three copies for the good of the cause.

It was Prof Davie's first intention to produce the work in twelve monthly parts, at $1.00 each, but has since decided to issue it in one octavo volume, neatly bound in cloth at $5.00 per copy, provided 500 *bona fide* subscriptions can be obtained.

There are fifty full page plates containing several hundred figures, illustrating all taxidermal methods as well as typical specimens from the various families of the animal kingdom in characteristic positions.

Plate 1, illustrates the common Robin in the successive steps of mounting, beginning with the first cut in skinning, each step being shown, until, in Plate 3, the bird appears mounted on the drying perch wrapped in threads.

Following this the various forms and methods in making up "scientific skins" are illustrated.

Then, plates illustrating different positions of birds, both singly and in groups, the Blue Heron being particularly fine.

Explaining the process necessary for small mammals the Fox squirrel is illustrated in all the different stages till completed and mounted, perched on a branch as natural as life.

For larger mammals requiring a framework the various steps necessary for the successful treatment of the dog, horse and elephant are shown, also the various steps taken in preparing fish, turtles and snakes.

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This work is to be so complete, authentic and elaborate, that all subsequent writers on Taxidermy will be compelled to quote from it extensively. It will be known as the *edition de luxe* and will be well worth double the money asked.

Every public library, high school and private library of any pretense, should possess this valuable reference work and we cannot urge too strongly that every Naturalist, whether interested in Taxidermy or not, shall send in a subscription, and as a guarantee of good faith, a draft for one dollar, which, in case the work is not published, will be returned.

Subscriptions may be sent to Prof. Oliver Davie, Columbus, Ohio, or to the editor of this paper.

Kansas City Academy of Sciences.

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Regular meetings for the next six months occur on the following dates: April 8, 22; May 6, 20; June 3, 17; July 1, 15, 29; August 12, 26.

MEETINGS UNTIL FURTHER NOTICE AT 516 MAIN ST.

Several hundred valuable scientific works have been kindly donated by Prof. Wm. Ferrel, the great American meteorologist.

At the last meeting of the Academy a list of Kansas City fossils compiled by Mr. Sidney Hare was presented and adopted by the Academy as a basis for future work. This list will be published in the May NATURALIST.

Mastadon Teeth.

By C. A. HESS, Edinburg, Ind.

Teeth of this huge post-tertiary animal (*Mastadon giganteus*) have been found in various parts of the country. In some states they are more common than in others; noted localities for them being New York, Kentucky and Indiana. This latter state was the "field of investigation," and most of my observations were made there.

The size of mastadon's teeth have been frequently exaggerated. The largest tooth yet discovered, was found near Newburg, New York, and measured only 7¾ x 5½ inches. Several teeth nearly as large have been found in Kentucky especially at "Big Bone Lick" where a large number have been unearthed. Most of the teeth from Indiana, were found in the southern part of the state. One very fine one from Spencer Co. was discovered by a farmer while plowing. The roots, crown projections, etc., were all perfect, except one small root which had been broken off. The stub of this root showed the interior color of the tooth to be yellowish-white. Any one could tell at a glance that the "original" owner of the tooth, was a herbiverous animal. Below is the data of the tooth taken from a collector's note book who saw it:

"Jan. 17th. 1889. Quadrangular. Nearly perfect. Found in marshy, clayey soil. Discovered in Spencer Co., Ind. Length from top to bottom 7⅛ inches. Top measurements 5⅛x4¼ inches. Bottom 4⅜ x3 5-6 inches. Length of crown projections 1 7-16 inches."

Butterflies at High Altitudes.

I have just read in an Eastern magazine an article on butterflies, wherein it is stated, as a fact rather remarkable that among the Alps, butterflies have been seen at altitudes as great as 8,000 feet. I have on two occasions seen them at heights considerably greater than 8,000 feet but I did not then know that there was anything remarkable about it.

Last summer, while on a peak of the Sierra Nevada mountains, at an altitude of 13,000 feet, I saw butterflies sailing leisurely about in the air above me, with no more ado than if it had been a lowland garden. That was above the line of perpetual snow. In climbing that peak I had passed over snow ten feet deep, and the crags around me were covered with ice and sleet. The sun shone clear, yet the air was cold.

At another time, in the summer of 1887, I saw butterflies at an altitude of 11,000 feet, on a mountain of British Columbia, near the southeastern frontier of Alaska. There was a pass, although a high one in the mountain, and the butterflies were going through it toward the East, and seemed to be migrating. Although these were not so high as those seen on the Sierra Nevadas, yet, in a latitude so far north it was more surprising to see them, practically almost under the arctic circle. The butterflies were several thousand feet above the line of perpetual snow. As I said, they seemed to be crossing the mountain, all going in the same direction. Those on the Sierra Nevadas, on the other hand, appeared to be flying about for their own pleasure, not going anywhere in particular.—*Hu Maxwell in Scientific American.*

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Book Reviews.

Books reviewed or announced in these columns can usually be obtained at regular rates, through the Editor of this paper.

The following books have been received from the Humbolt Library.

Modern Science and Modern Thought. With a supplemental chapter on Gladstone's "Dawn of Creation" and "Proem to Genesis," and on Drummond's "Natural Law in the Spiritual World." By S. Laing. Illustrated. In this work are concisely presented the principal results of Modern Science and the revolutions they have effected in Modern Thought. The results are shown of recent inquiries into the composition and constitution of the earth and of the universe, into the nature and laws of matter, the history of man, the myths of all races, religions of all peoples; force, motion, electricity, light and heat are treated in the abstract. The sixth edition of this book was demanded in England within one month from date of publication. Price 45 cents.

Utilitarianism. As to merits of this book it is sufficient to say it was written by John Stuart Mill. Price 15 cents.

The Electric Light and The Storing of Electrical Energy. By Gerald Molloy, D. D., D. Sc. Illustrated. This volume is replete with information upon a subject which involves some of the problems of the 19th Century. Price 15 cents.

The Modern Theory of Heat and The Sun as a Storehouse of Energy. By Gerald Molloy, D. D., D. Sc. Discussions of both subjects are instructive and show much thought, particularly the latter. Price 15 cents.

Upon the Orign of Alpine and Italian Lakes and upon Glacial Erosion. A series of papers by prominent members of Geographica Societies, etc. of America and Europe with an introduction upon the Origin and History of the Great Lakes of North America by Prof Spencer, State Geol. of Ga. Many important points in Geology are here presented and many scientists claim it disproves the Mosaic cosmogomy. It is in two parts. Price 45 cents for both.

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3	Ridpath's History U. S. sheep. 750 pages.	3.25	5.00
1	Green's Analysis English Lang. 324 pages.	.65	1.25
1	Plane and Spherical Trigonometry. Wentworth. 176 pages.	.75	1.00
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1	History of the Present Tariff. Faussig. 112 pages.	.55	.75
4	Quick or The Dead. Rives. 142 pages.	.30	.50
2	From Jest to Earnest. Roe.	1.05	1.50
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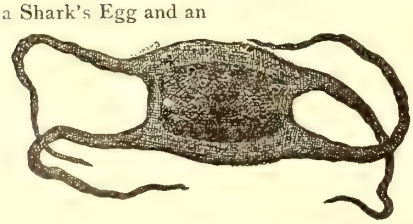

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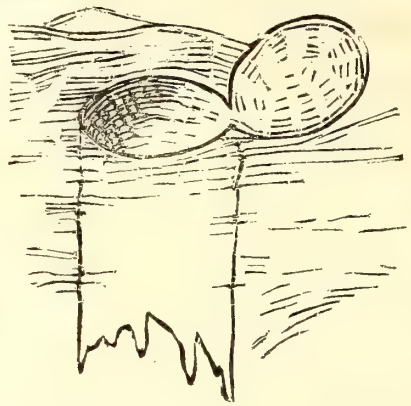

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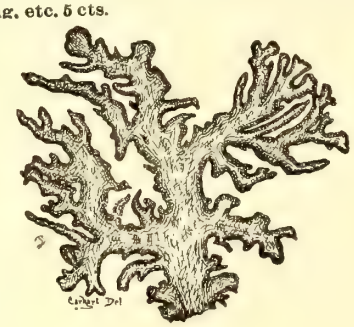

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The Naturalist.

VOL. IV. KANSAS CITY, KANSAS, MAY, 1890. NO. 10.

List of Kansas City Fossils of the Upper Coal Measure.

Approved by the Kansas City Academy of Sciences, April 22, 1890.

Compiled by SID. J. HARE.

I have the pleasure of presenting to you a list of our fossils. Though not complete it contains many new names which have not heretofore appeared in a list of Kansas City Fossils. It combines the lists published by Mr. Wm. H. R. Lykins and Rev. John Bennett, omitting all doubtful names.

I am under many obligations to Mr. Wm. H. R. Lykins, Rev. John Bennett, Mr. W. J. Parrish, Mr. E. Butts, Mr. D. H. Todd and other members of the Kansas City Academy of Science for assistance in preparing and checking this list.

Although alphabetically arranged the order of life given in Miller's "North American Geology and Palaeontology" has been followed, beginning each letter with the lowest order, plants. Miller's corrections in spelling have also been followed.

1 Annularia longifolia.
2 Axophyllum rude.
3 Archæocidaris longispina.
4 Archæocidaris norwoodi?
5 Archæocidaris species?
6 Archæocidaris do.
7 Æsiocrinus harii.
8 Æsiocrinus magnificus.
9 Athyris subtilita.
10 Athyris sp?
11 Allorisma costatum.
12 Allorisma granosum.
13 Allorisma regularis.
14 Allorisma subcuneatum.
15 Allorisma subelegans.
16 Astartella vera.
17 Avicula longa. (*Gervillia do.*).
18 Aviculopinna americana,
19 Aviculopecten carboniferus, (*Pecten do.*).
20 Aviculopecten coxanus,
21 Aviculopecten hertzeri.
22 Aviculopecten interlineatus.
23 Aviculopecten neglectuc,
24 Aviculopecten occidentalis. (*Pecten do.*).
25 Aviculopecten providencensis. (*Pecten do.*).
26 Antliodus sp?
27 Bellerophon crassus.
28 Bellerophon carbonarius.
29 Bellerophon inspeciosus.
30 Bellerophon marcouanuo.
31 Bellerophon montfortanus.
32 Bellerophon percarinatus.
33 Bellerophon stevensanus.
34 Bellerophon textilis.
35 Bellerophon sp?
36 Bellerophon do.
37 Calamites cannifornis.
38 Calamites sp?
39 Calamites sp?
40 Cardiocarpon sp?
41 Cyclopteris sp?
42 Campophyllum torquium. (*Cyathophyllum do.*).
43 Chetetes sp?
44 Cyathaxonia distorta.
45 Cyathocrinus stillativus.
46 Chonetes geinitzanus. (proposed for *C. glabra.*).
47 Chonetes granuliferus.
48 Chonetes millepunctatus.
49 Chonetes smithi.
50 Chonetes verneuilanus.
51 Conularia crustula.
52 Conularia sp?
53 Cyrtoceras sp?
54 Chaenomya leavenworthensis. (*Allorisma do.*).
55 Chaenomya minnehaha. (*Allorisma do.*).
56 Conocardium parrishi.
57 Cypricardina carbonaria?
58 Cuneamya subtruncata. (*Edmondia do.*).
59 Crenipecten retiferus. (*Lima do.*).
60 Cythere sp?
61 Cladodus mortifer.
62 Ctenopetalus occidentalis.
63 Ctenopetalus semicircularis.
64 Cidarospongia ella.
65 Delocrinus hemisphericus.
66 Delocrinus missouriensis.
67 Discina nitida. (*D. missouriensis.*). (*Ordicula nitida.*).
68 Discina convexa?
69 Discina sp?
70 Discites toddanus.
71 Discites sp?
a Deltodus angularis. (see *Orthopleurodus carbonarius.*).
72 Deltodopsis angusta. (*Deltodus augustus.*).
73 Eocidaris hallanus.
74 Erisocrinus typus.
75 Erisocrinus planus. (*Ceriocrinus do.*).
76 Eupachycrinus platybasis.
77 Eupachycrinus magister.
78 Eupachycrinus craigi.
79 Eupachycrinus sangamonensis (*Cyathocrinus do.*).
80 Eupachycrinus sphaeralis.
81 Eumetra vera. (*Retzia do.*).
82 Euomphalus pernodosus. (*Strparollus do.*).
83 Euomphalus sudrugosus. (*E. rugosus.*).
84 Euomphalus sudquadratus. (*Straparollus do.*).
85 Edmondia aspenwallensis.
86 Edmondia glabra.
87 Edmondia nebraskensis.
88 Edmondia reflexa.
89 Edmondia unioniformis.
b Edmondia subtruncata. (see *Cuneamya do.*).
c Entolium aviculatus. (see *Pernopecten do.*).
90 Fusulina cylindrica.
91 Fusulina robusta.
92 Fenestella shumardi.
93 Fenestella sp?

94 Fistulipora nodulifera.
95 Goniatites minimus.
96 Goniatites planorbiformis.
97 Goniatite politus.
98 Goniatites sp?
99 Goniatites sp?
d Hymenophillites adnasens.
(see *Rhacophyllum do.*).
100 Hydreionocrinus pentagonus.
101 Hydreionocrinus mucrospinus.
(*Zeacrinus do.*).
102 Helodus sp?
103 Lepidostrodus princeps.
104 Lophophyllum proliferum.
(*Cyathaxonia do.*).
105 Lingula carbonaria.
106 Lingula scotica?
107 Lepetopsia parrishi.
108 Lexonema muiticostatum.
109 Lexonema rugosum.
110 Lexonema sp?
111 Meekella striato-costata.
(*Plicatula do. do.*).
112 Macrochilina garcilis.
(*Macrocheilus do.*).
113 Macrochilina intercalaris.
(var *pulchillus.*).
114 Macrochilina medialis.
115 Macrochilina primigenia.
116 Macrochilina texanus?
(probably large var of *M. ventricosus.*)
117 Macrochilina ventricosus.
118 Macrochilina
119 Macrochilina
120 Myalina swallovi.
121 Myalina sudquadrata.
122 Myalina recurvirostris.
123 Myalina peraltenuata.
124 Myalina kansasensis.
125 Myalina sp?
126 Monopteria gibbosa.
127 Monopteria longispina.
(*Girvilla do.*).
128 Monopteria sp?
129 Monopteria do.
130 Modiola sudelliptica.
131 Modiola sp?
132 Monotis gregaria.
133 Monotis sp?
134 Mocrodon obsoletus.
135 Macrodon tenuistriatus.
136 Neuropteris aspera?
137 Neuropteris elrodi.
138 Neuropteris smithsi.
139 Neuropteris tenuifolia?
140 Naticopsis altonensis.
(*Natica do.*).
141 Naticopsis gigantea.
142 Naticopsis monilifera.
e Naticopsis nodosa.
(see *Trachydomia do.*).
143 Natacopsis nodosa.
(var. *hollidayi.*).
144 Naticopsis nana.
(*Platystoma do.*).
145 Naticopsis pricii
146 Naticopsis sudovata?
147 Naticopsis ventricosa.
(*Narica do.*).
148 Naticopsis wheeleri.
(*Littorina do.*).
149 Nautilus ferratus.
150 Nautilus forbesanus.
151 Nautilus missouriensis.
152 Nautilus nodoso-dorsatus.
153 Nautilus occidentalis.
154 Nautilus planovolvis.
155 Nautilus ponderosus.
156 Nautilus sangamonensis.
157 Nautilus species?
158 Nautilus do.
159 Nautilus do.
160 Nautilus do.
161 Nautilus do.
162 Nucula parva?
163 Nucula venticosa.
164 Nucula species?
165 Nucula do.
166 Nuculana bellistriata.
(*Leda do.*).
167 Nuculana sp?
168 Orthis pecosi.
(*O carbonaria.*).
169 Orthoceras aculeatum.
170 Orthoceras cribrosum.
171 Orthoceras species?
172 Orthoceras do.
173 Orodus do.
174 Orthopleurodus carbonarius.
(*Xystrodus occtdentalis.*).
(*Sandalodus carbonaria.*).
f Orbiculoidea.
(see *Discena*,
175 Pecopteris serpillifolia?

Continued on 3rd. page.

Cases of Long Pupal Periods among Lepidopters.

R. R. Rowley, Curryville, Mo.

In May, 1888, I received from Mr. W. H. Edwards of Coalburgh, W. Va., two larvae of *Anthocharis genutia* which were feeding on pepper grass. On the 22nd. of the same month both larvae pupated, having suspended two days before. As the imagoes did not appear in a reasonable length of time I communicated the fact to Mr. Edwards and he informed me they would remain chrysalids untill the next May. I had reared the different species of Rhopalocera common to the Mississippi Valley and considered seven or eight months a long pupal period for a Butterfly and was unprepared for a much greater length of time.

The summer of 1889 came and went and still my little Genutia pupae showed no signs of a change of condition but entered upon the second year of their fast. Informing Mr. Edwards of this fact he then told me of the tendency in the genus Anthocharis to remain two years in the chrysalis state.

The pupae were kept through the past two winters in a closet, adjoining a warm room and the first imago, a beautiful male appeared March 7th. 1890, and the other a female, five days later (12th.), after a pupal period of nearly 22 months.

I have since learned that the California species of Authocharis often remain two years as pupae but my informer, Mr. E., does not state that he has ever known a Genutia pupae to go so long.

Two years without food or drink! A long sleep but a glorious awakening! The despised and groveling caterpillar is metamorphosed into a thing of beauty and, as a gaudy Butterfly, it flits from flower to flower on wings rivaling the rainbow in delicacy of color, and, from a lowly diet of leaves, it sips the nectar of roses!

Another case.—A pupal period of from eight to twelve months is common among Sphinges and Bombycids but alonger period is rather an uncommon occurrence, ta least so far as my experience and observation in raising larvae and handling pupae go.

On the 13th, of February, 1888, I received four cocoons of *Callasomia angulifera* from Miss E. L. Morton of Newberg, N. Y. These cocoons were spun in the midsummer of 1887. Three of them produced imagoes the following May but the fourth remained over till the 19th. of the next April (1889), having passed 21 or 22 months in the pupal state.

I have had chrysalids of *Smerinthus* (Triptogon) *modestus*, *Citheronia regalis*, *Eacles imperialis*, *Philampelus pandora* and other moths to fail to give imagoes in the spring and summer, lingering even till early autumn before death overtook them, but never new one to survive till the next summer.

In the April number of THE NATURALIST on 2nd. page and 3d. column, 28th, line from top of column, read "It offers the *poorest* collecting inducements" instead of "It offers the *best* etc."

List of Kansas City Fossils of the Upper Coal Measure.

176 Poteriocrinus missouriensis? (*P. longidactylus.*).
177 Polypora submarginata.
178 Polypora sp?
179 Productus americanus.
180 Productus cora.
181 Productus costatus.
182 Productus longispinus. (*P. splendens.*).
183 Productus magno-costatus.
184 Productus nanus.
185 Productus nebraskensis.
186 Productus pertenuis.
187 Productus prattenanus.
188 Productus puuctatus.
189 Productus semireticulatus.
190 Productus symmetricus.
191 Productus sp?
192 Platyceras nebraskensis.
193 Platyceras sp?
194 Platystoma grayvillensis. (proposed instead of *P. tumidum.*)
195 Platystoma peoriensis.
196 Pleurotomaria bonharborensis
197 Pleurotomaria broadheadi.
198 Pleurotomaria carbonaria.
199 Pleurotomaria coniformis. (*P. conoides.*).
200 Pleurotomaria coxana.
201 Pleurotomaria grayvillensis.
202 Pleurotomaria kentuckiensis. (proposed instead of *P. depressa.*).
203 Pleurotomaria missouriensis.
204 Pleurotomaria newportensis.
205 Pleurotomaria perhumerosa.
206 Pleurotomaria sphaerulata.
207 Pleurotomaria speciosa?
208 Pleurotomaria subscalaris.
209 Pleurotomaria tabulata. (*Turbo do.*).
210 Pleurotomaria turbiniformis.
211 Pleurotomaria valvatiformis.
212 Pleurotomaria species?
213 Pleurotomaria do.
214 Polyphemopsis inornata? (*Lexonema inornatum.*).
215 Pernopecten avicnlatus. (*Entolium do.*). (*Pecten do.*).
216 Pinna peracuta.
217 Placunopsis carbonaria.
218 Placunopsis recticardinalis.
219 Pleurophorus oblongus.
220 Pleurophorus tropidophorus.
221 Prothyris elegans.
222 Pseudomonotis hawni.
223 Pseudomonotis radialis. (*Pecten do.*).
224 Phillipsia major.
225 Phillipsia minor.
226 Phthanocoris occidentalis.
227 Peripristis semicircularis. (*Ctenoptychius do.*).
228 Petalodus alleghaniensis. (*P. destructor.*).
229 Rhacophyllum adnascens. (*Hymenophillites do.*). (*Schizopteris do.*),
230 Rhombopora lepidodendroidea
231 Rhynchonella uta. (*R. osagensis.*). (*Terebratula uta.*).
232 Retza mormoni. (*R. punctulifera.*). (*Terebratula mormonii.*).
233 Syringopora multattenuata.
234 Scaphiocrinus hemisphericus.
235 Spirifera camerata.
236 Spirifera lineata.
237 Spirifera plano-convexa.
258 Spiriferina kentuckiensis.
239 Spiriferina kentuckiensis. (var. *propatula.*).
240 Streptorhynchus crassum. (*Hemipronites crassus.*). (*Orthisina crassa.*).
241 Streptorhynchus crenistriatum (*Spirifera crenistria.*).
242 Syntrielasma hemiplicatum. (*Spirifera hemiplicata.*).
243 Soleniscus fusiformis. (*Machrocheilus fusiforme.*).

Continued on 6th page.

A Brief Review of the Public Labor of Chaplain John D. Parker, of Fort Riley, Kansas.

Chaplain John D. Parker first visited Kansas in 1866 as a delegate of the General Congregational Association of Ill. The following year he was elected Prof. of Nat. Science, at Washburn College Topeka.

Illinois College, in recognition of his attainments and services in Nat. Science. conferred on him, in 1867, the Degree of Doctor of Philosophy.

In 1871, Gov. James M. Harvey, unexpectedly and without solicitation, appointed Prof, Parker Superintendent of the Kansas Institution for the Blind, which position he successfully filled for four years. On resigning this position he moved to Kansas City, Mo., where he was engaged for seven years as city missionary for all the Protestant churches, and in teaching, editing and proof reading.

Prof. Parker originated the Kansas Academy of Science and the Kansas City Academy of Science. He gave fourteen years of constant and tireless effort, sometimes amidst financial embarassment, and under great discouragement, to laying the foundations of these societies. The states of Kansas and Missouri, in recognition of this labor of love for the promotion of science, for which he expected no earthly reward, secured for him a Chaplaincy in the United States Army. Since his appointment in the Army he has been stationed at Forts Mc Kavett and Stockton in Texas, and at Forts Hays and Riley in Kansas. By a recent order from the War Department he will be sent to Fort Robinson in Nebraska. Kansas, by this change, will lose an old resident, one whose history is a part of the history of the state.

The above is an extract from the Junction City, Kan., *Tribune.*

We are also in receipt of a letter from Prof. Parker from which we quote the following: "I like THE NATURALIST very much. It is *multum in parvo.* With a little effort I think its circulation might be greatly increased. THE NATURALIST brings me the flavor of Nature, and I love the aroma of the fields and the groves. I am glad you contend for the historic integrity of the Moundbuilders. A man who cofounds the Moundbuilders with the Indians, I think, has never studied the mounds very carefully, or the character and habits of the North American Indian.

It farely makes my heart warm to hear of the prosperity of the Kansas City Academy of Science. My faith is now reassured. and I believe the good people of Kansas City. will, in due time, arise in their might and give you a fire proof building for a permanent home for your collections, and an endowment that will enable you to prosecute your work. Something like the Peabody Institute would be an honor to Kansas City, a monument to science, and return a hundred fold to the people."

The Naturalist

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Charles H. Dawson and Edward T. Keim,
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KANSAS CITY, MAY, 1890.

METHODS OF TAXIDERMY, by Prof. Olive Davie, announced in the last issue of THE NATURALIST, is receiving universal support from the Naturalists and Taxidermists of the country but especially from those of the West.

The original drawings have thus far, to our knowledge, been examined by Mr. Frank Webster, Boston, publisher of the *Ornithologist and Oologist*, Mr. L. S. Foster, N. Y. City, publisher of *The Auk*, Mr. Frank H. Lattin, Gains, N. Y., publisher of *The Oologist*, of Albion, N. Y. and ourselves. The O. and O. devoted considerable space to describing the drawings and commended Prof. Davie's enterprise and devotion to the cause in the warmest possible manner. *The Oologist*, published the descriptive circulars in full besides nearly an additional half page, in which it very truthfully speaks of Prof. Davie as "a publisher that always gives his patrons two hundred cents on a dollar." Mr. Foster issued handsome invitation cards inviting the Naturalists of the metropolis, to call and examine the drawings and will undoubtedly refer to them at length in *The Auk*.

The *O. and O.* stated that only 500 copies would be published. This is undoubtedly as Mr. Webster understood it, but should such be the case Prof. Davie would be out close on to $2.000. The facts are, the edition will not be limited to 500 copies, there will, however, have to be 500 *boni fide* subscriptions before the order will be placed with the publishers, and these original subscribers will be the only ones who can secure the work for $5.00. Subsequent purchasers will have to pay $8.00 or $10,00.

Following the example of the *O. and O.*, we suggested that one dollar be sent as a guarantee of good faith on the part of the subscriber. We knew at the time that this was not absolutely necessary, but thought it a wise precaution. Those who wish the work, but have not yet responded because of the guarantee asked, need not let that interfear and are requested to send in their names at once agreeing to pay $5.00 on completion of the work.

The Oologist stated that the drawings cost $1,000. They were shipped by express with that valuation, but, referring to Prof. Davie's letter of Feb. 28, '89, we quote; "I have invested in drawings no less than between $1,400. and $1,500." which corresponds to out statement in the last issue of THE NATURALIST that "the drawings cost in the neighborhood of $1,500." This harmonizes the various statements published and will, no doubt, thoroughly clear up the matter for some of our rather critical subscribers.

Prof. Davie has thus far received the bulk of his support from the West, and in his usual happy style writes; "My muse, if I had any, would sing of the *West*." He further very kindly writes; "your zeal has thus far brought in nearly twice as many subscriptions as have been secured from any other individual." The Prof. is mistakened somewhat, however, when he credits the editor of this paper with all the results, for Mr. E. T. Keim rendered very material assistance. Even then, if we were not surrounded with whole souled people who fully appreciate a good thing when they see it, as was evinced by Mr. Shaw's subscribing for three copies, we would not have been so successful.

The very liberal manner in which the various publishers referred to above have gratuitously supported Prof. Davie's efforts is highly appreciated by him and leads him to hope that the remaining subscriptions necessary will speedily come in.

When a work of this magnitude is undertaken by as prominent an Author and as skillful a Taxidermist as Prof. Davie, individuals need not hesitate for a moment about sending in their subscriptions, especially when it is endorsed by all the leading scientific Journals of the country. The names and addresses of the 500 subscribers, necessary before publication will begin, will also appear. This will be a new feature; each subscriber will have the satisfaction of knowing he was one of the "original 500" who, willing to assist a good cause had the courage to subscribe before the work was issued. He will he rewarded by saving at least four dollars in the price of the book.

Those who have already subscribed can still further assist by sending to Prof. Davie, Columbus, Ohio, for circulars for distribution among your friends and also for blanks on which to record other subscriptions.

SEVERAL of our foreign subscribers for Vol. IV have objected to the manner in which we substituted the *Literary Companion* for No. 3 of THE NATURALIST. Had they read the *L. C.*, they would have noticed that the leading article, "Recent Discovery of Fossils in Kansas City, Mo.," was written for THE NATURALIST and originally appeared in No. 3, of which we unfortunately do not have even a single copy, hence the substitution. We have had no complaints from our U. S. subscribers, and trust this explanation will be satisfactory.

YESTERDAY we were honored by a visit from Prof. L. L. Dyche of the Kansas State University. Since Prof. Snow's promotion as Chancellor of the University, Prof. Dyche will have full charge of the Zoological departments.

The increased duties necessitates the appointment of two assistants, which will allow the Prof. the usual amount of time for field work. We were highly entertained by descriptions of several of his extensive trips, thirteen of which have been taken in the interests of science for the benefit of the University. The last one, in British America, occupying about six months, we have referred to before in these columns. The Prof. is already arranging for another trip in British America in quest of large mammals and other specimens for the University. He will probably start in July and will be absent six months or longer.

VERNON L. KELLOGG, who, as associate editor of the Lawrence Journal, wrote several excellent articles on Kansas Birds, was recently elected as professor of Entomology in the Kansas State University.

LATELY, the Signal Service of Kansas City received a very novel instrument which combines the work of three machines. It registers accurately the rain fall to .05 of an inch, every five minutes it records the direction of the wind and it also shows the velocity of the wind in miles per hour.

WE received a pleasant call this week, from Rev. John Bennett of Kansas City, who was accompanied by Mr. Parish, also of Kansas City, and by Prof. R. R. Rowley of Curryville, Mo.

FIELD and Armstrong is the name of a new firm of collectors at Brownsville, Tex. They are successors to H. M. Field.

RHODE ISLAND is being stocked with Tennessee quail—Exchange.

Several hundred pairs of California Quail were shipped to Tenn. via. Kansas City.

THE NATURALIST'S vacation came unexpectedly. So unexpectedly that there was no time for announcements. Further explanations are unnecessary. The next two issues, Nos. 11 and 12, will follow at once. Subscriptions will now only be taken for Vol. IV, all back numbers of which can be furnished except No. 3, for which a substitute is given containing the leading article published in that issue. Communications and subscriptions may be addressed to

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Kansas City.

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Regular meetings for the next six months occur on the following dates: April 8, 22; May 6, 20; June 3, 17; July 1, 15, 29; August 12, 26.

We publish elsewhere in this issue a brief biography of the founder of the Kansas City Academy af Science, Rev. J. D. Parker, and also an extract from a recent letter from him. For some time the Academy has experienced considerable inconvenience for the want of a suitable place of meeting. It recently received a large donation of valuable scientefic works from Prof. Wm. Ferrell, and is constantly receiving others from various sources, which, for want of room are temporarily boxed and stored. If the Academy had a building of its own, as suggested by Prof. Parker, it could not only shelve its books, but there are thousands of valuable local specimens that would immediately be placed in its care, which, when properly arranged, and accessible to the public generally, would be of inestimable benefit not only to Kansas City, but to both Missouri and Kansas.

State Geologist, Prof. Arthur Winslow says in his Bulletin No. 1, page 11: Every State should have, located at its center of industry and intellectual activity, a well equipped museum, under active management and responsive to the needs of the times. There should be exhibited and explained the natural features and the products of the State, and there, should be systematically collected, recorded and preserved from injury and loss, all that mass of facts which constitute the basis of complete knowledge.

Kansas City is a "center of industry and intelectual activity" a railroad center as well and, given a suitable repository, many of the private collections of this vacinity, now scarcely accessible, would at once be donated to the Academy, where they could be examined and studied freely by all so inclined. To quote from Prof. Winslow again: The value of such an exhibit, when carefully arranged with a view to illustrating definite occurences or processes, and when accompanied by all necessary charts and diagrams, can hardly be overestimated.

The suggestion of a building, made by Prof Parker, has been thought and talked of by various members of the Academy, at various times and will, we trust, be acted upon in the near future, in such a vigorous manner that the end desired will be fully realized.

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" " both to one address	7.11
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Editor NATURALIST, K. C., Mo.

List of Kansas City Fossils of the Upper Coal Measure.

244 Schizodus curtis.

245 Soleniseus newberryi.
(*Sexonemu do.*).

246 Soleniscus ventricosus.
(*Machrocheilus ventricosum.*).

247 Schizodus wheeleri.
(*Littorina do.*).

248 Schizodus sp?

249 Solenomya radiati.

250 Solenomya species?

251 Solenomya do.

252 Solenopsis solenoides?
(*Clidophrous do.*).

253 Streblopteria tenuilineata.
(*Pecten tenuilineatus.*).

254 Serpula insita.

255 Spirorbus carbonarius.
(*Gyromices ammonis*).

256 Synocladia biserialis.

257 Trigonocarpum starkianus.

258 Terebratula bovidens.

259 Terebratula sp?

260 Turritella stevensana.

261 Trachydomia nodosum.
(*Naticopsis nodosa.*).

262 Ulocrinus buttsi.

263 Ulocrinus kansasenis.

264 Yoldia carbonaria.

265 Yoldia stevensoni.

266 Yoldia sp?

267 Zeacrinus maniformis.
(*Poteriocrinus do.*).

Fossils of the Loess:

Helix sp?

Helix do.

Pupa do

Succina do.

Mastodon giganteus; teeth and fragments of bones.

Molars of Ruminants.

Incisors of small rodents.

The "Lithographic Limestone" or Lower Division of the Kinderhook Group.

R. R. Rowley, Curryville, Mo.

Above the Niagara Oolite and resting upon it at all of the outcrops we have visited in this county, are a few feet of black shale, referred by Shumard and Swallow to the Hamilton group of rocks. Their identification of this strata, warranted only by its position and color, and in the absence of all fossil remains is wholly unreliable.

In the old Missouri Survey we are told, however, that but one well marked outcrop of Hamilton rocks had been met with in the state and that north of Ashley, Pike Co., Mo. We have never seen this locality and can say nothing of the correctness of the reference but hope some day in the near future to visit the Ashley beds and will be glad to give the readers of The Naturalist the results of our observations. The above mentioned black shale is about three feet thick at Louisiana and we have been fortunate enough to find in an inch band of the black shale, teeth and cranial bones of fishes identical with remains found above in the blue shale. This latter shale is about fifteen inches thick and directly overlies the black shale, containing, besides the Ichthyic remains, a few Brachiopods of species found above. Between the blue shale and the Lithiographic Limestone proper are a few inches of soft clay-shale, yellow or brown in color and yielding an interesting and often finely preserved series of fossils.

The Lithographic Limestone itself, is nearly fifty feet in thickness and is made up of a great number of thin layers, from an inch or two at the top to quite a foot at the base; gradually thickening from above downward.

This stone is yellowish or bluish and very compact, breaking with conchoidal fracture.

The layers are separated by softer yellow stone, often little harder than clay, and the seams near the base sometimes give the collector beautifully preserved Brachiopods. The only fossil near the top of the Lithiographic Limestone is the Peculiar form called *Felicites gracilis*, the rest of the remains being confined to the base of the limestone and the underlying shales.

Begining with the base of the Kinderhook Series and passing upward we will number the subdivisions of the strata and use the numbers after the species of fossils in the following list. All species followed by 1, are found in the Black shale; those by 2, in the Blue shale; 3 in the yellow clay shale, and 4, in the Lithographic Limestone.

Ichthyic remains, 1 and 2.
Coprolites, 1 and 2.
Phillipsia sp? 2.
Orthoceras sp? 4.
Goniatites sp? 4.
Gasteropod, 3 and 4.
Platyceras sp? 3.
Allorisma hannibalensis? 2.
Lamellibranch, 2 and 4.
Lamelliabranch, 4.
Aviculopecten? sp? 4.
Spirifera marionensis, 2, 3, and 4.
" sp? 3, and 4.
" sp? 4.
" hannibalensis, 2, 3. and 4.
Cyrtina aculirostris, 2, 3, and 4.
" ? sp? 3 and 4.
Athyris hannibalensis, 2, 3, and 4.
" sp? 3.
" ? sp? 3 and 4.
Terebratula sp? 3.
" ? sp? 3
Rhynchonella missouriensis, 3. and 4.
Orthis sp? 2, 3, and 4.
Steptorhynchus sp? 3 and 4.
Productella pyxidata, 2, 3 and 4.
Chonetes ornata, 3 and 4.
" sp? 3 and 4.
Lingula sp? 1 and 2.
" sp? 4.
Cronia rowleyi (Gurley's species), 3.
" sp? 3.
Discina sp? 3.
Conularia sp? 2.
Spirorbis kinderhookensis, 3 and 4.
Cornulites carbonarius, 3 and 4.
Dichocrinus sp? (base and column.) 3, 4.
Zaphrentis sp? (2 species.) 3 and 4.
Michelissia sp? 2. 3, and 4.
Bryozoa (several incrusting forms.), 3. 4.
Ptychostylus subtumidus, 2.
Fpocge. 2 and 3.
Felicites gracilis, 4.

The Kintograph.

N. Y. Letter to Minneapolis Tribune.

During the hour's talk that I had with Edison he told me of the kintograph, his new apparatus for reproducing the scene upon the stage of a theater, or any other moving picture; also of the new improvemenis upon the phonograph, and his process of getting iron from ores heretofore considered worthless. The kintograph is a most astonishing affair, which, while extremely simple, may possibly become a wonderful adjunct to the phonograph. When it is completed—and Edison is thoroughly convinced that its perfection is now merely a question of detail and experiment—it will be possible not only to hear the voice of a person coming from the phonograph, but to see the person's face just as it was when the words were spoken, with every change of expression, the movement of the lips, the eyes, etc. If it is a reproduction of a scene upon the stage the picture will be seen, the actors moving about, and making proper gestures as they speak. In the case of the head of the person talking to you from the phonograph it will be life size if necessary. The mechanism by which this is accomplished is extremely simple and the thing has been made possible by the discovery of instantaneous photography, by which animals in motion or a cannon ball flying through the air have been photographed.

Ant Warfare.

Observations of a Geologist.

The other day I saw a most interesting sight. It was a raid by an army of red ants upon a nest of black ants of a smaller size. I noticed a swarm of more than two hundred ants of a kind that are about five-sixteenths of an inch long running around this way and that, and was sure at once that something unusual was about to happen. When I first saw them they had just arrived at the corner of the barn and a lot of them that had lost their way were swarming up the barn door. On looking closer I saw that these were only stragglers and that the main body was advancing along the ground beside the barn. I drew back the weeds until I found the head of the column and kept abreast of it afterward.

Three or four of the little warriors were ahead of the others and seemed to be scouts; the rest formed a body about five inches wide and four feet long. On they ran as straight as an arrow toward the edge of the bluff—down over it and into a hole a foot or two below. Immediately dozens of black ants came running out, some with loads of eggs and some without—all frightened and fleeing for their lives for they were attacked from all sides and robbed of their precious burdens.

Now there is a continous stream of the red fellows in and out of the nest and the outcoming are laden with eggs and young. So quickly has it happened that inside of three minutes more than half of the army has started back and I hasten to the head of the column again. Straight dack over the same route to the corner of the barn and thence on up the hill. Up, up, up 'till I begin to wonder at the distance they had come. One of the little leaders carries an egg in his mouth and still is able to keep in advance of the other two. Over stones, sticks and other obstrucotins, pushing and pulling, at last they come to the end of their journey. They are met by the workers and a few slaves and either disappear with their booty or turn it over to the workers and begin to make their toilet. They clean themselves with their legs and clean their legs again with their mouths as does a cat.

What a wonderful accomplishment for these little creatures. I go back over the path and find it in every way the easiest, shortest and most convenient that could have been chosen; no engineer could have done better. I calculate the distance. Each way they have travelled over eighty feet of hillside and forty feet of level ground. In twenty minutes these pigmy warriors had marched two-hundred and eighty feet, raided a city and brought back the spoils.

Chas. W. Dawson.

Insects at High Altitudes.

Dr. E. Sterling.

In your April NATURALIST I see a note on "Butterflies at high altitudes," which reminds me that in August of 1850 I made a balloon ascension from the Hippodrone at Paris, under the guidance of the Brothers Goddard. At the height of over 14,000 feet, a number of Butterflies passed us, going several hundred feet over our heads. A number of other insects kept us company almost during the entire trip, which lasted —— hours. This is about the greatest elevation of insects yet on record. Gen. Fremont, you know, picked up a Humble Bee some 13,000 feet above sea level — Cleveland, Ohio.

Book Reviews.

Books reviewed or announced in these columns can usually be obtained at regular rates, through the Editor of this paper.

The *Youths' Compaion* is an entertaining weekly that should be in every family. The publishers are doing nicely in that direction as they announce over 400,000 subscribers. We will receive *new subscriptions* for the *Companion* for $1.75 and also send Vol. IV of the NATURALIST.

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Notice.

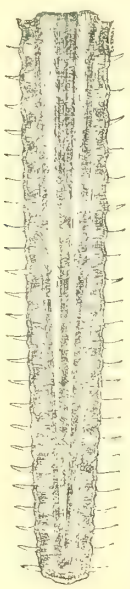
So far as the publishers and editor of this paper are concerned, THE NATURALIST will be discontinued at the end of Vol. IV. For several months we have solicited subscriptions only for Vol. IV. consequently but few extend over that time. To these the amount of cash due will be forwarded simultaneously with the issuing of No. 12.

The time ufually devoted to THE NATUAALIST now being entirely occupied with much more remunerative work, is the principal reason of our discontinuing same. Should there be any one, however, who desires to continue its publication after the completion of Vol. IV, we should be pleased to hear from him and would take pleasure in turning over our list of subscriptions that expire with this Vol. Address Ed. NATURALIST.

Kansas City.

A Fishy Bird Story.

The Columbia *Herald* tells of the neat manner in which a mother Quail piled up the twenty-eight half shells from which her brood was hatched, arranging them like tea cups, one within the other. There are fish stories and snake stories, and there is no reason why there should not be bird stories.



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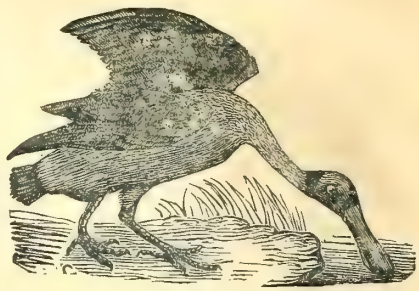

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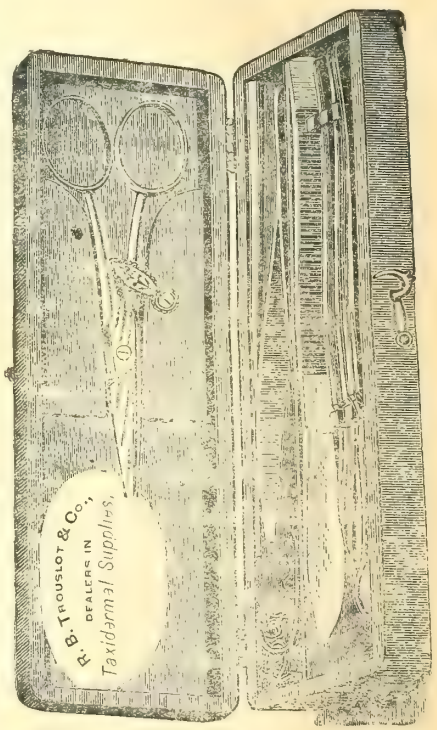

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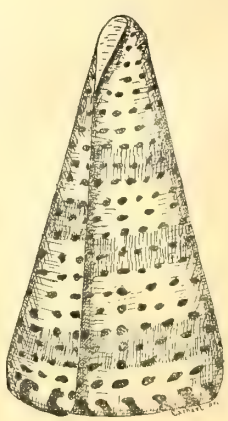


The Naturalist.

VOL. IV. KANSAS CITY, MO., OCTOBER, 1890. NO. 10.

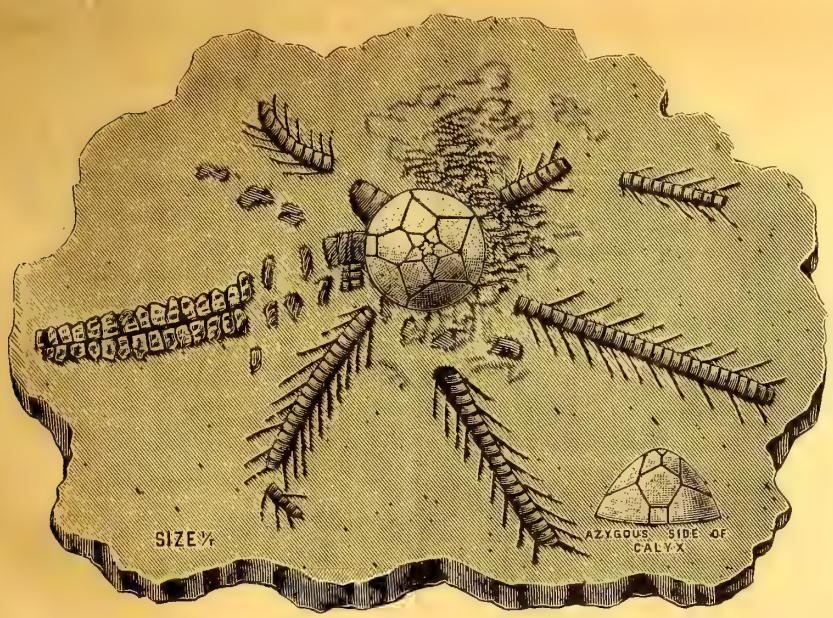
A Description of a New Species of Echinodermata From the Upper Coal Measures of Kansas City.

By E. Butts.

Aesiocrinus lykinsi, n. sp.

This species has a paraboliform calyx; surface of plates smooth; sutures not indented; column decagonal with curved intersections; basals five in number and of hexagonal form; they are considerably bent up and measure from tip to tip about four times the diameter of the column.

The subradials are comparatively large, having somewhat more width than heighth, four of them are hexagonal and one heptagonal; these are very slightly curved, appearing nearly tangential to the basals. The upper sides are about one-third longer than the lower sides, and about five times the length of the ends.



The first radials are considerably larger than the subradials, and all are pentagonal; the distance across the top of the first radials is greater than it is at the intermediate angle, which, with the width of the subradials is the cause of the pyramidial form of the calyx.

There is one azygous plate resting between two of the first radials and on top of the heptagonial subradial, which is quadrangular, the upper side of this plate being slightly longer than the lower.

The probosis, tentacles and cilia are the same as *A. magnificus*, from which species it may be distinguished by having no vertical plates in the calyx, also the great width of the subradials, and also the basals being much longer and curved upwards; these are likewise its variance with any other known species of this genus.

It was found in the upper coal measures at the corner of Tenth street and Baltimore avenue in Kansas City, Mo., in the Blue Shale known as Rock No. 97.

This species is here first described and is named in honor of one of our earliest local workers in Palalontology, Mr. W. H. R. Lykins.

Mosquitoes Defied.

Powdered ipecacuanha, one-half ounce; alcohol and sulphuric ether, each one half ounce. It is said that when a person sponges this mixture on the skin he can bid defiance to mosquitoes and other insects so troublesome in warm weather.—*O. & O.*

A heavy shower of frogs fell near London the other day. They were blown from some distance, doubtless.—*Ex.*

Yes, and recently during a shower in Boston a pedestrian discovered a snake on the pavement, *in front of 409, Washington street.* Of course it came with the rains. But when Webster came down from his "den" and pocketed his snakeship and came near mutilating a "bean eater" who was about to squelch the snake with a big plank, they had to conclude that at all events it didn't rain down, and thus no doubt fell a shower of frogs.

The Wolf Spider.

Suddenly appears on the wall a dark gray fly or perhaps a beetle. It moves with wondeuful quickness, but always by fits and starts, sometimes one way and then another. All at once it darts a few inches from the wall and then flies back again to the same spot. This action is several times repeated, and is so quick that the creature's wings cannot be seen. I approach the wall more closely, and find that the creature is neither fly nor beetle, nor even an insect. It is a hunting spider, and of course, has no wings. How then, did it fly from the wall and back again? I have long been familiar with these pretty and active spiders. I have often seen them slide cautiously toward a fly, leap upon it, and have a sharp tussle with it before it succumbed to the venomed fangs. Window sills, especially when facing southward, are happy hunting grounds for this spider. I have often seen spider and fly tumble together off the window sill, and presently the spider return, still clasping its prey. It had saved itself from falling to the ground by spinning a thread as it rolled off the sill, and was able to regain its position by climbing up the thread. But until lately I had never seen it leap from a perpendicular wall, and, to all appearances, fly back again. The thread affords the means whereby this remarkable feat is performed. It is extremely elastic, and when the spider has reached the end of its leap the thread contracts and jerks it back again, just as a child throws a ball away from him, and draws it back to his hand by an India rubber thread which is attached to it. How I had failed to notice this action for so many years I cannot imagine. Even the common wolf spider will act in the same way. I caught a glimpse of the creature crouching in the wall under the shadow of a vine leaf, so that I could identify it. Suddenly it darted from the wall and alighted on the ground at some little distance, the elastic thread causing it to describe a low and graceful curve, just as if it had wings. As it darted from the wall I put the net over it, and much to my surprise, found that it was no insect, but a wolf spider.—*Longman's Magazine.*

Roger Williams' park, in Providence, R. I., is said to be a lovely spot, of which the people there are very proud. A bronze statue of Robert Burns has been placed in the park.

Who will be the first to donote a park to Kansas City?

A Cunning Fish.

He who goes fishing in our quiet inland waters soon becomes familiar with the pretty golden and ruddy sunfish, but no angler, simply as such, ever saw this lively creature at its best. It is one thing to catch them, which is too easily done to consider sport, and another and far nobler thing to watch their winning ways when guarding their nests. He who does this will realize what a fish really is, for to credit those animals, as a class, with a modicum of common sense seldom occurs to anyone. But this much can be set down as incontrovertible—a fish is no fool.

Not long since, as I was passing over a little bridge, I noticed a big mother sunfish in a violent state of trepidation, and paused to determine what was the trouble. writes Dr. Charles C. Abbott in the *American Agriculturist*. A single glance told me the whole story; a host of little minnows were darting in at the eggs that covered the little space of a shallow nest, and the fish was defending them as best she might. The attacking minnows were in two bands, and as one of these were chased away, the other rushed into the depression in the sand. But before they could seize the eggs, or so I thought, the sunfish returned with a rush and scattered the intruders.

So it kept up and apparently would have never ended had not a formidable enemy of the sunfish appeared upon the scene. This was a huge sucker, and entirely too powerful a foe to be met in single combat. The sunfish recognized this at once, and hit upon a happy expedient, which succeeded admirably. Instead of vainly darting at the sucker, it sped round and round its nest with inconceivable velocity, and so stirred up the water that the intruder was frightened or bewildered, and beat a hasty retreat.

It was all a matter of a few minutes, but how much transpired! The little minnows proved their cunning by their tactics but what a deal of quick wit centered in the brain of the sunfish.

✦

Mr. Chas. F. Carr, of Madison, Wis., has again entered the publishers' world, presenting Volume 1, No. 1, of the *Wisconsin Naturalist*. It has sixteen pages, exclusive of cover, the latter, by-the-way, being decorated with an excellent full page engraving suggestive of various branches of nature.

The following interesting table of contents is presented: Salutatory, Do Animals Reason; A Trip to the Natural Bridge, Marine Illumination, Passenger Pigeons Nesting in Wisconsin, Black Terns Abandoning Their Nesting Haunts Excavating a Mound on the Shores of Lake Mendota, List of Turtles in the vicinity of Madison, Random Notes and News, The Indoor Aviary, The Fresh Water Aquarium.

Encourage Mr. Carr by sending 50 cts. or a year's subscription.

CLIPPINGS.

FACTS, THEORIES AND OBSERVATIONS IN THE WORLD NATURE.

A great many "land-locked" salmon were lately placed in the river Thames by the Thames Angling Association, in the presence of several gentlemen, who have a deep interest in the development of fresh-water fisheries. This species of salmon is considered to be admirably adapted for a life in the Thames, as it is not a migratory one. Fish that quit the waters of that river for the sea are not likely to return to it ever again, as the lower portion of the Thames is little better than a huge sewer.

This is the Bruce system of balloon signalling: An ordinary balloon of very transparent material is employed. In the side of the balloon electric glow lamps are arranged. The balloon is a captive one, and the rope which attaches it to the earth is utilized for the support of wires to convey the electricity to the lamps. When the balloon is sent up at night the lamps are caused to illuminate the balloon at intervals of longer or shorter duration so as to present signals to the distant observer, in accordance with the Morse alphabet.

It is announced that Messrs. Appert, of Blichy, France, have discovered a process that will make glass-blowing by the mouth unnecessary. Many attempts have been made to get rid of this painful process in the operation of glass making, but to this day, in every bottle house may be seen pale-faced men with their cheeks hanging limp in folds, the result of years of glass-blowing by the mouth. Cases have been known in which men's cheeks have been worn so thin that they have actually cracked, and it is a common sight in a bottle house to see blowers at work with their thin cheeks puffed out like the fingers of a glove.

A great discovery of fossil footprints has just been made at Bosworth's quarry in Holyoke. Here is a clean surface of shale about 100 by 40 feet, on which are seen about 200 tracks. Nearly all of them are in rows, the longest row containing seventeen tracks. The tracks are from six to eight inches in length, and were probably made by a reptile, that, if it had front feet seldom used them. This is without doubt the largest uncovering of tracks since the days of President Hitchcock.

Carrier swallows are now used in France by the military authorities instead of pigeons. A test was recently made at Rauboix, and fifteen of the birds were given absolute freedom of wing for the first time. They flew in different directions, and in about twenty minutes one came back and perched on the trainer's outstretched finger. In half an hour every swallow was back.

A London physician who is an expert in diseases of the eye, says that he recently had a patient who, by excessive smoking had brought on "an attack of amblyopia, with a centaai scotoma." That ought to be a warning to the smoker. The plain English of it is that the smoker's vision had become dull and weakened, and that he was afflicted with a dizziness which caused him to imagine that his head was constantly spinning around.

Among the successful inventions in the practical application of electricity, the United States may claim the telegraph, the telephone, the incandescent light, and unquestionably the microphone also. This is a brilliant record. To France belongs the credit of the accumulator and the Gramme ring; to Italy, the battery and the Pacinotti ring; to England, the self-exciting dynamo; to Germany, the drum armature, and to Russia, the commercial arc lamp.

It has recently been proven by measurements that France is undergoing a process of slow sinking which may lead to serious consequences. Since 1884, the "genic" corps of engineers have been engaged in effecting level measurements over the whole country, and it has been shown that the country sinks from the south toward the north. Thus between Marseilles and Lille—a distance of 540 miles—the sinking amounts to ten inches annually. If this movement continues, the northern part of France may in a few centuries become submerged. It may here be mentioned that off the coast of St. Malo, in fine weather, fossilized trunks of trees may be seen at the bottom of the sea, indicating that these parts were once above water.

You may find hens in a hennery, but don't look for bats in a battery.

A naturalist has drawn the following likeness between human beings and the ant: Their extraordinary likeness in many respects to human beings is perhaps the most wonderful thing about them. To begin with, they live in large cities of their own building; they have a queen in each community to whom they show most loyal respect and devotion; they have an army of soldiers to protect the busy workers, they keep slaves; they make use of a certain insect called the aphis, much as we make use of cows; they are fond of their homes and are ready to fight vigorously all invaders; they are careful and tender in cherishing their young; they lay up stores for the winter; they are most particular to clear away rubbish from their dwellings; they even seem to have certain ceremonies on occasions such as a formal funeral. We should not be surprised to learn that although the ants are said to resemble human beings in these particulars, they, as a matter of fact far excel them in thoroughness of execution. The nests which they build for themselves are described as houses full of passages and rooms, or as cities full of streets and houses, always partly below and partly above ground.

The Naturalist.

R. B. Trouslot, Editor.
Assisted by E. T. Keim, David H. Todd and Sid. J. Hare.

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KANSAS CITY, OCTOBER, 1890.

THE spirit of the age, Democracy, shows iself nowhere more vividly in contrast with the past than in the universal culture and education of the mass of people regardless of the artificial divisions into which some would still classify mankind.

Schools, colleges, books, papers, societies for the study of general and special subjects abound to such an extent that the poorest need go to but small trouble to secure the essential advantages in the pursuit of knowledge which wealth may command.

Kansas City's Public School System more nearly represents the ambition of the city than any other outward evidence of its life—unsurpassed in this respect by any other city of equal growth, its spirit is progressive and liberal, vying with the oldest American cities in this American institution.

Our Public Library has grown from a modest beginning a few years ago to become an institution which commands respect for its general arrangement and system, as well as the great use made of the limited facilities afforded it.

The Art School, just about to enter upon its fourth year, shows in its lusty growth that notwithstanding the commercialisms essential to so new a city as ours that it has found appreciation and support. If necessary we could cite more such instances, but these are sufficient to raise the question whether Kansas City is not now ready to make use of an Academy of Science. We believe it is.

For the past two years a number of interested gentlemen have been meeting for the purpose of discussing scientific subjects, and while the number attending has been small, the interest has never flagged.

This society has now over 1,000 volumes—the gift of Prof. Wm. Ferrell, and a number of other books—the nucleus of a library, stored at present for want of a better resting place.

The exhibition in the West Central wing of the Exhibition Building shows what can be done in the way of a scientific collection made with but little trouble. Some accommodation, however, should be afforded for a library, and for the collections of scientific objects, which, at present, this society cannot accept for want of a suitable place to arrange and display them.

Should such quarters be provided, they would be used for the meetings of the society, which at present cannot be largely attended for want of accommodations.

Our city is constantly becoming better known in the east and west for the interest taken in the thorough study of natural sciences by those now interested in this society as well as others.

A suggestion made by a correspondent of the *Star* is a good one; it is for a building that will be self-supporting from the rents of store rooms on the first floor and offices on the second—the third and fourth floors to be devoted to such institutions as are in their nature not self-supporting, while at the same time desirable elements in the life of our city, such as the Scientific Society, for one.

The desirability of such an institution is not open to dispute.

We have stated the case as concisely as possible. The matter rests with the citizens who are looking around for means to make our city a desirable place in which to live. Already a move has been made towards giving this society a home—but more help is needed. The active members of the Academy are in earnest, and they hope to hear from any who feel the force of these remarks. The time is ripe to crystallize this scientific movement and give it the means for wider work. Is the man here?

ONLY 10,000 copies of THE NATURALIST issued this month and not a very good month for THE NATURALIST either.

VISIT the exhibit of the Academy of Science at the Inter-State Fair.

BETWEEN the Ural and Okhotsk seas there is a spot half as large as the state of Michigan, which is frozen ground to the depth of ninety-four feet. That is, it has never thawed out since the world was created, and probably never will.

THE man who, in the dim morning of society, made a flint knife, had a hard labor to execute works of skill. The man who, succeeding him, had a Sheffield blade could do perhaps 1,000 operations which the flint knife could not accomplish.—*Cardinal Manning.*

GEO. L. ENGLISH & Co., of Philadelphia and New York City, notified us several weeks since that they had forwarded a cloth bound copy of their price list and catalogue. To-day it reached us via Valparaiso, Ind., and Kansas City, Kansas, the postman claimind 12 cts. for his trouble.

MR JOHN M. BRUMBUGH, of Concordia, representing the state fish commission, is distributing fish through the waters of the Missouri in this vicinity. The fish commission is doing a flourishing bnsiness this season and all the streams of any importance in the state are being stocked with young fishes. There will be rare sport and some rich dinners as the result of this season's work of the fish hatchery.

A WONDERFUL landscape on exhibition in Paris is executed in European and foreign insects. Every desired tone is supplied by 45,000 coleoptera in the foreground and 4,000 varieties of the insect tribe for the remainder of the picture. The work required four years of the artist's time.

What's the matter of arresting him for cruelty to animals?

SINCE Jacob Pfecht, of the Erie Motor Car Co., of Erie Pa., has discovered a process of personal insulation. is it not quite probable that there will be no more electrocutions?

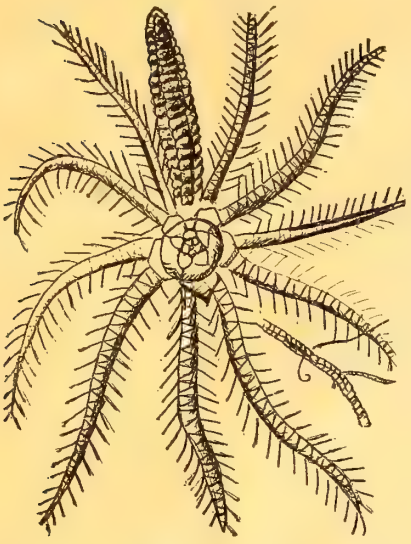
The other day Mr. Pfecht fortified himself and received a charge of over 500 volts with no serious results. If this is a fact, linemen can hereafter work without fear of being fried alive in mid air, to the horror of a helpless crowd.

ON the bank of the Skunk river, in the neighborhood of Richland, a few days ago, L. J. Bales found the tooth of a prehistoric animal of mammoth dimensions There was a large cavity in the molar and it was filled with coal in such a manner as to show that it had formed there from vegetable matter, thus indicating that the animal had lived at a very remote time from the present. The Richland *Clarion* says that the banks of "Skunk river are prolific in these prehistoric relics of an age that is so remote that it is hard to conceive the vast number of years that have elapsed since they lived."

NEW FOSSILS RECENTLY DISCOVERED IN KANSAS CITY.

THE FOLLOWING CUTS ILLUSTRATE THREE NEW SPECIES OF FOSSILS RECENTLY DISCOVERED BY KANSAS CITY COLLECTORS.

Æsiocrinus Harii, M. G.



CLASS 1, CRINOIDEA. FAMILY PATERIOCRINIDÆ.

The Crinoid is generally the most coveted of fossils, but few fine specimens having ever been found in the Upper Coal measures. Very recently Mr. Sid J. Hare, of this city, had the pleasure of announcing to the Palæntological world the discovery of a new species found in a perfect condition which has been named by Messrs. S. A. Miller and William T. E. Gurley, and described by them and illustrated in the April number of the Cincinnati Journal of Science. Several fine examples of this species may be seen at the Academy of Science Exhibit.

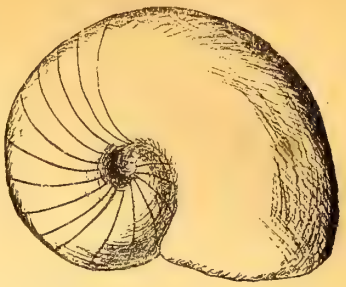
Ulocrinus Buttsi.

CLASS 1, CRINOIDEA. FAMILY DELOCRINUS, OR EUPACHYCRINUS.

This specimen was named by Messrs. Miller & Gurley in honor of Mr. E. Butts, City Engineer of Kansas City, Mo. The basal, or cut of the species shown above is the only one that has ever been found and is a very interesting fossil.

The members of the Academy regret that the type specimens cannot be seen at their exhibit, it having been loaned to Mr. Gurley, of Danville, Ill., through the kindness of Mr. Butts, who has spent much time and money in developing the crinoidea beds of this vicinity.

Discites Toddanus.



CLASS CEPHALOPODA—FAMILY NAUTILIDÆ.

The above represents a fossil found in the neighborhood of Brush Creek. It was first recognized as a new species of Discites by David H. Todd, of this city. Mr. Wm. T. E. Gurley, of Danville, Ill., confirmed this discovery and gave the variety the specific name it now bears. About twelve specimens have been found in this locality. Several are in the Academy exhibit.

COMPOSITION OF GEMS.

THE WORK DONE BY NATURE'S CHEMISTRY IN FORMING PRECIOUS STONES.

"No," said the chemist, "the ruby is not called a ruby because it is red, for the topaz, which may be yellow or a delicate wine color, and the sapphire, which is blue, are both rubies. The humble toiler consoling himself with his clay tobacco pipe, the potter molding the plastic clay into shape upon his magic wheel, or the delver in damp slate quarries, probably does not know that his pipe and his clay and nis brittle slate are of the very substance from which the flaming Oriental ruby, the mellow topaz and the rich sapphire are evolved; but such is the fact. They are among the most beautiful of gems, yet are but simple crystals of a siliceous earth—mere bits of alumnia. The glorious blue light that lurks within the sapphire is the chemical action of one grain of iron on every one hundred grains of alumina. The red ruby owes its brightness and hue to a mingling of chromic acid with the parent clay.

"Different from the Oriental topaz is the topaz from Brazil, which, beautiful as it is, is nothing bnt a compound of silica, or flint, and alumina, which also makes the garnet, and largely compose the Occidental emerald and the Beryl stone. These two stones also contain an earth known as glucina, so called because of the sweetness of the salts discovered in it.

"The diamond is the king of gems, a monarch blazing like the sun, and the opal is its moonlight queen. Yet, as every one knows, the diamond is only a chip of coal, and the opal, as every one does not know, is simply a mingling of silica and water. But the diamond is the spiritual evolution of coal, the realization of its highest being. Ten parts of water and ninety parts of silica, combined in the mystic crucible of nature, form the opal, the water giving to the gem that shifting, changeable, irridescent color which is the opal's peculiar charm. Who would imagine that the fire in the opal is not fire at all, but, of all things, water! And yet the silica that holds the radiant moisture captive is the common flint from which our forefathers struck the igniting sparks into their tinder boxes.

"But the opal is not the only precious stone that owes its being to flint. The amethyst, the cat's-eye, the Egyptian jasper—all are idealizations of the ultimate efforts of natural chemistry acting on silica. What is the lapis lazuli? A bit of common earth painted throughout with sulphuret of odium. And the torquoise—what forms it? and how did it receive its soft, pale blue color? The torquoise is phosphate of alumina, and copper in the earth gave it its lovely hue. Chrysolite is pure silicate of magnesia. Of the rare decorative stones and marbles, if there were no carbonate of copper the seeker after malachite would find his search fruitless, and the sculptor would sigh in vain for the matchless Carrara marble if there were no carbonate of lime."—*New York Sun.*

How Far Can You See?

There has been a great discussion going on in Europe concerning the distance at which large objects on the earth's surface are visible. Emil Metzger mentions that he once saw Keizeerspickt, in Sumatra, when separated from it by 110 English miles; he also says that on very favorable occasions he has made out to see Guy Merapi, in Java, when 186 miles intervened. E. Hill, the civil engineer, says that he has seen Mount Blanc from Piz Mauraun, near Dissentis, a distance of almost 120 miles. S. Starkie Gardner states that Mount Blanc is visible from Piz Landgard, though distant about three degrees. Waymper, the explorer, says that when he was in Greenland he could plainly see a mountain peak from which he was separated by 160 miles. The whole range of the Swiss Alps have been looked upon by J. Hippislyly while 200 miles away; Sir W. Jones affirms that the Himalayas have appeared to his view from the great distance of 224 miles.—*St. Louis Republic.*

SUCCESS AWAITS ANY ONE WHO WILL make himself thorough, reliable and accurate in Shorthand and Typewriting. The Dickson School of Shorthand and Typewriting, Deardorff building, southeast corner Main and Eleventh streets, offers the simplest, easiest and briefest system, yet the most thorough course. It is a progressive school with progressive methods for progressive times, with hundreds of graduates in positions, highly recommended by the business public; course 12 weeks: session day and night; enter at once.

Rare Opportunity.

As I wish to devote all my time to the Taxidermy and Natural History business, I will close out my entire stock of live birds, cages and bird goods at a reasonable figure. Here is a good chance for anyone wishing to establish a Bird Store. Would take desirable Natural History Specimens for part payment. C. F. CARR, Madison, Wis.

Our Academy.

The Kansas City Academy of Science has had a financial struggle for existence from its incipiency. Its members are poor in property but rich in energy. They are determined to found and maintain an institution that will be a credit to Kansas City.

Knowing our financial weakness, we fully realize that we have undertaken a difficult task.

On this, fair week, we desire to take the public into our confidence and call attention to our work and plans for the future. As an indication of what the Academy may be expected to do in the future in the way of the advancement of science, attention is called to the listing and classification of local specimens that have been made by some of our active members.

In addition to this, it is with the great est pride that we refer to the discovery of several new species by different members of the Academy—some of which species are described in the present number of THE NATURALIST.

Aside from all scientific and educational considerations—which to the members are invaluable—there are the best technical and commercial reasons why our Academy should be maintained and perpetuated.

The Commercial Club, Citizens' Committee and many other organizations are laboring to establish manufacturing plants at Kansas City.

More than one-half of these manufacturers must, if they prosper, obtain their raw materials from our local resources. Who but our Academy of Sclence is daily calling attention to our manifold resources?

As soon as we have the floor space at our command, we expect to make a permanent display of the material resources of Kansas City for the use of manufacturers, present and prospective.

This display will include clays, lime, cement, building, macadam and lithographic stones, native woods, fibrous plants, gravel, sand, animal fibre and everything known to be of commercial value to the manufacturer.

We expedt to be able to demonstrate, both by an exhibition of the manufactured articles and chemical analysis, what can be done with our raw materials.

It will be seen from this short statement that the commercial prosperity of Kansas City will depend largely on work in the line that we are trying to follow.

We ask the sympathy, co-operation, financial support and general good will of all who are interested in the development of the resources of Kansas City and its vast tributary territory.

EDWIN WALTERS.

Wonders of the North.

There are a few very curious things about British Columbia rivers. Everybody knows that they flow in the wrong direction while they are young. For instance, the Peace and Laird persist in going to the Artic ocean, in defiance of the Rocky mountains and the laws of nature, while the Columbia, Fraser and Kootenay only consent to travel seaward after going in the opposite direction some hundreds of miles. But they also have very peculiar ways of making ice, quite opposite to that laid down in the text books. In the Skeena I have observed the ice in autumn to form on the river bed among the boulders in globules, like a mass of fish spawn. this often growing until the reef actually reaches the surface, but more often it breaks away in large pieces and floats off dawn the stream, bearing pebbles and even bowlders for many miles.

There are many natural bridges on our rivers aiso. In the Kicking Horse, three miles below Field station, there is a rock bridge in a slate formation which is inclined so as to present sharp edges—very unpleasant to walk upon. Every observant passenger on the Canadian Pacific railroad has noticed the snow bridge on the Illecillewaat. There are also records of ice bridges.

Not least among the natural wonders of the coast is McKenzie passage, a little to the westward of Kingcome inlet. It is a chasm about six miles in length leading to the base of an isolated and broken peak, 5,665 feet high. The walls are very close together, vertical and snow crowned. The sun never shines in this awful gorge; the vapor from its waters hangs dark and bitter cold, unmoved by any wind, and no living being enters its solitude. I find but two records of this place having been visited by white men. Scarcely less wonderful is an inlet tributary to Dean's canal.

Some of the tide sluices are very dangerous, and many lives have been lost in them. A great puzzle they were to early travelers, who found cataracts of sea water pouring into many of the inlets. they aae explained by the existence behind them of large basins filled by the flood tide, the outlet being too small for its ready escape at the ebb. Some of these salt water cataracts are as much as twelve feet high.

On the Yukon the river the upper waters are rendered quite clear by the deposit of all their silt in a chain of lakes, but lower down a stream called White river enters from the south, so charged with glacier mud that the Yukon from thence to the sea is too dirty for even the bottom of a cupful to be distinguished. Graylings rise readily to the fly above; no fishing without nets is possible below. Moreover, where the great river crosses the Arctic circle the tributaries from the tundra lands are like rivers of tea, so deep is the stain of vegetable matter from the moss swamps of the far south.—*Victoria Times.*

THE WEATHER PLANT.

AS A WEATHER PROPHET IT IS USELESS.

The attempt made in England by Herr Nowack to predict weather by the use of the so-called "weather plant," the well-known tropical climber, *Abrus precatorious*, have failed. A bulletin of the Kew Observatory, describing the experimental tests, states that out of 140 predictions with the "weather plant" only one weather change was anticipated by Herr Nowack. The result of the inquiry is that the plant is not to be relied on as a substitute for the ordinary systems of weather prediction.

A meteorologist experienced in weather forecasting might easily have foreseen the failure of the "weather plant." The clouds and winds at any particular place on a given day will often undergo great changes from the movement or influence of atmospheric "waves," which, twenty-four hours before, were thousands of miles distant from that place. As no plant, or even animal, however sensitive to variations of humidity and temperature, can ever be affeced by these remote waves in time to indicate a coming storm or "cold wave," no confidence whatever can be placed in its mountions. The mimosa plate indicates the moderate temperature of 60 degrees by becoming rigid, but it shows the same sign of rigidity in the blazing sun heat of 125 degrees. The slow-moving hvrricanes of the West Indias has surprise the wariest and most weather-wise birds, which are sometimes caught by hundreds in the meshes of the cyclone. It is not likely that we shall ever discover any automatic or natural storm warner.—*Chicago Herald.*

EARTH'S MEASUREMENT.

The First Attempt to Ascertain the Size of the Terrestial Ball.

In 1597, Fernel, a French physician, made the first attempts to ascertain the size of the earth. After having observed the height of the pole at Paris, he went to the northward to a point where the pole was just one degree higher than at the point of the first observation. He measured the distance between the two stations by the number of revolutions of one of the wheels of his carriage, to which an indicator had been attached. From these observations he came to the conclusion that the earth's circmference was about 24,408 Italian miles.

Measures executed more carefully were made in many countries; by Snell in Holland, by Norwood between London and York, England. It was not, however, until 1669, that Picard, under the auspices of the French Academy of Sciences, reduced the degrees to anything like a certainty. His plan was to connect two points by a series of triangles, thus ascertaining the length of the arc of a meridian intercepted between them, to compare it with the difference of latitudes found by making celestial observations. The stations used were Melvoisine, in the vicinity of Paris, and Sourdon, near Amiens. While these measurements were being made a discussion arose as to the interpretation of them, some affirming that they indicated a prolate, others an oblate spheriod. The former figure may be popularly represented by a lemon, the latter by an orange. To prove which was right Picard's observations were extended far to the north and south, one expedition going to the north and south, one expedition going to Peru, the other to Lapland. The other to Lapland. The Peruvian expedition worked nine years on the question, the Lapland about five. The results of the measures thus obtained confirm the theoretical expectations of the oblate form.—St. Louis *Republic.*

KINGS OF THE JUNGLE.

STRANGE AND LITTLE KNOWN PEOPLE WHO LIVE IN INDIA.

Only about twenty miles north of Cape Hamorin, the most southern point of India, live a very curious people known as the Kanikaras, or "Kings of the Jungle." Hidden as they are among the fastness of the southern Ghauts, very little is known of them, for they seldom venture down to the coast towns, and explorers have neglected them. They are one of the tribes of savages who live in a few parts of India, and who are nearly as wild as though though they wandered in the jungles of Africa instead of dwelling in one of the most populous parts of the world.

Mr. George Cadell, while engaged in surveys for the Forest Department of India, recently had occasion to visit the Kings of the Jungle. They are an humble sort of Kings and are compelled to be very careful not to offend against the laws of caste, for they are regarded as the lowest of the low, and it is a part of their duty to keep at a very respectful distance from all the other people who inhabit the little native province where they live.

They are not allowed, for instance, to approach within twenty paces of any of the shop-keeping or trading classes. When they wish to make a purchase they must deposit their money on a stump or stone, and then retire until the money has been replaced by the article they have bargained for. Their abject position makes them very timid. They ran away into the jungle whenever they saw Mr. Cadell's coming, though he did not put on any airs like the Brahmins, who despise them. He found, however, an easy way to win their friendship. All he had to do was to hang a small tin of gunpowder at their door post, and as soon as the natives saw it they were always certain that any one who made them so fine a present was their good friend. They would then invite him to the best entertainment they could provide and would build him a hut among branches of the trees; for these curious natives sleep on platforms built in the fork of trees, and over the platforms they rear grass roofs. They are thus out of the reach of wild elephants, who are apt to be uncomfortably inquisitive in the night time.

The Kanikaras are great hunters, and their weapons are commonly bows and arrows, though some of them have very poor matchloeks. All elephants are the property of the Maharajah of the Travancore province, where they live, and the Kings of the Jungle are required to help hunt the elephant when his Highness wants a little ivory. They are also required to furnish wax for some of the temples, but render no other service to the state. They wear nothing but a narrow loin cloth and a few ornaments and bead necklaces. Leaden earrings are the most conspicuous articles of women's dress. A very curious fact about them is that they have the decimal system of enumeration, though they can count only to ten. They have pebbles, each of which represents ten units, and if the articles they wish to count are represented, for instance, by three pebbles, it means that the articles number three tens, or thirty units.

Living within a few miles of civilization and big towns, these primitive savages still make a fire by revolving a stick of hard wood in the hollow of a dry bamboo. The bamboo, by the way, serves to indicate the age of a kanikara. Any man who has seen a bamboo blossom three times is regarded as a very venerable person.—N. Y. *Sun*.

Definitions of the Day.

Light and shade—A window.
A ready rider—The life-boat.
A household word—Mortgage.
A heir-line—The birth notice.
With might and mane—The lion.
Out in the cold—A handkerchief.
The first person singular—Adam.
An utter failure—The stammerer.
No sooner said than done—Amen.
A military heir—The sun of a gun.
The cream of the joke—Ice-cream.
Fixed up regardless—The glass eye.
A buy-word and a reproach—Boodle.
Booted and spurred—The slow horse.
A "pack" animal — The cigarette fiend.
The pale of civilization—Face-powder.
A line of business—The lynchers rope.
Returned with thanks — Grace before meat.
Music by the banned — The organ-grinders.
A rough estimate—Figuring in sand-paper.
A spark of genius—One who knows when to go home.
Cut and dried — The man who was "withered by a glance."
A beggarly account of empty boxes—The average sporting column.

THE HUMBOLDT LIBRARY, 28 Lafayette Place, New York City, favors us with 124 Quintessence of Socialism, by Prof. A. Schaffle, former Minister of Finance in Austria. Translated from the Eighth German edition by Bernard Bosanquet, M. A. Price 15 cents.

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126. Double number. Physiognomy and Expression, by Paolo Montegazza, Senator; Director of the National Museum of Anthropology, Florence; President of the Italian Society of Anthropology. Illustrated. Part 1. Price 30 cents.
127. Double number. Same, Part II. Price 30 cents.

NOT many days since an amateur taxidermist, a young man of large mental calibre, holding forth in the city assessor's office, decided to do some specimen hunting. Rumaging his brother's outfit, he secured a large number of shells marked "D" and started out.

Now Harry is a noted crack shot; so, after firing at a Ruby-throat with no good results, and nothing to show but a wing and a tail feather of two other larger specimens, he became excited and commenced to investigate those "D" shells. This disclosed seven buck shot in each one and explained the missing specimens—shot to pieces. His brother had recently returned from an extended deer hunt in the north-west, and the "D" meant loaded for deer, instead of, as he supposed, "Ducks No. 8 shot." Harry examines his shells now, before leaving home.

THE KINDERGARDEN for September begins the third volume of this interesting and valuable magazine. Though the price of this periodical has been reduced to $1.50, it has been nearly doubled in size, and many departments added. Among them none are more interesting than the Primary Sunday School department and Our Nursery, which is especially interesting to parents of young children.

Geology in Virginia.

W. H. Ballou, the novelist, has made a discovery in Virginia which promises to be of great geological value. While killing a rattlesnake in the mountains near White Sulphur Springs he stirred up the earth and came upon signs of the geological formation of the Silurian age. He sent for Prof. Cope of the University of Pennsylvania, who extended the examination until he became fully convinced that the range of mountains in Virginia was formed in the earliest Paleozoic ages, instead of in the second or Devonian period, as has generally been supposed.. It is on this account that the tops of the Virginia mountains contain fertile soil. Prof. Cope is preparing a careful scientific report on the discoveries, which will be printed in book form shortly. According to his judgment the Virginia mountains are now to be ranked among the oldest mountains in the world.—*New York Press*.

Good Books for the Library.

SCIENTIFIC AND OTHERWISE.

Ridgway's North American Birds, $7.50.
Coue's Birds of North America, $7.50.
Davie's Methods in Taxidermy, subscriptions received now $5.00; after Jan. 1, $7.50.
Davie's Egg Check List (paper) $1.25.
A.O.U. Check List of N. Am. Birds 50c.
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EXCHANGES.

will be inserted free for actual subscribers. Copy must be detached from letter and written on one side of paper only; not to exceed five lines, including address, estimating eight words to the line.

The Upper Divisions of the Kinderhook Group.

R. R. Rowley, Curryville, Mo.

Resting upon the Lithographic limestone in this county are about twenty-five feet of lead or dove colored shales, wholly destitute of fossils. At Louisiana three feet of clay sandstone overlie the shales, and, from the peculiar worm-like passages so noticeable in this stone, it was called the "Vermicular Sandstone" by Dr. Shumard and Prof. Swallow in the old Missouri Survey.

Besides these burrows (?) the fresh split surfaces of the stone often display a flat, whorled fucoid, doubtless a species of *Tavnurus*. Casts of *Spirifera marionensis*, *S. hannibalensis*, *Streptorhynchus sp?* a *Terebratula*, probably *T. burlingtonensis Productella pyxidata Grammysia hanni*, *balensis* and a few *Avicula*-like *Lamellibranchs*, a Goniatite, a small Orthoceras and an undetermined Gasteropod, all in a poor state of preservation, constitute the flora and fauna of this standstone. At Louisiana the Lower Burlington Limestone rests directly upon the "Vermicular Sandstone," but in the western part of the county and the eastern part of Audrain a variable thickness of Chouteau Limestone may be seen along the brooks and creeks.

Three miles east of Curryville in the bed of a brook tributary to Peno creek, the Chouteau Limestone, as a weathered outcrop, yields an interesting series of Corals, together with a few other fossils in a fair state of preservation. But few of these forms have been identified. Among the known species are *Michelinia placenta*, *Zaphrentis calceola*, *Chonophyllum sedaliense* (?), *Syringopora harveyi* (?) and *Eucomphalus latus* (?). Besides these are four or five unidentified Polyps, probably new species, and among them a spiniferous *Zaphrentis*. There is an *Orthis*, a *Productella*, a large *Athyris*, a *Productus*. *Strophomena rhombordalis*, an *Orthoceras*, a *Granatocrinus*, a small *Actinocrinus*, an *Ollacrinus* and two or three fragments of *Ptatycrini*.

Two and a half miles southeast of Curryville I gathered from the gravel of a little stream's bed a great many coralline forms, including one or two Polyps, different from the species at the former locality. *Michelinia placenta* was the most abundant form, while *Zaphrentis calceola* was the rarest. No Brachiopods were found here and but one Crinoid and one Blastoid. The Crinoid is a good calyx of a new species of *Platycrinus*.

Half a mile northeast of Bowling Green along the C. &. A. railroad cut, a tubular coral, two species of small *Platycrini*, an imperfect *Poteriocrinus* and a few Polyps were found.

Northwest of Curryville on Spencer creek, there is a great thickness of this limestone, as well as along the streams in eastern and northeastern Audrain county, but at the localities visited but few fossils could be obtained and all identical with the species collected at the outcrops east of Curryville.

It will be observed that the series of fossils from these various Chouteau localities are entirely distinct from the fauna of the Lithographic Limestone, unless the *Orthis* in the two groups are identical species, while several of the Chouteau forms are characteristic of the Lower Burlington Limestone at Louisiana. With the fossils before him, the collector is almost forced to the conclusiou that the Chouteau Limestone (*Michelinia placenta* beds) is nearer to the Burlington Group in fauna than to the Lithographic Limestone.

The White Bellied Nuthatch a Friend of the Farmer.

S. R. Ingersoll, Ballston Spa, N. Y., states in the *O. & O.* that at this time of the year when the cocoons of the tent caterpillar are to be seen on every farm, the White-bellied Nuthatch is particularly useful, destroying as it does large numbers of the cocoons. Tearing them from their fastenings, he drags them along the rough bark of the tree until they catch, then pulls at them, tearing off the outer covering of the chrysalis which is then devoured with apparent relish. These, together with numerous other insects which go to make up their daily food, particularly recommend them for protection on the farm. We think the above cut will enable the dullest to identify Mr. Nuthatch.

Prof. Oliver Davie, of Columbus. Ohio, returned recently from a five week's vacation among the islands of Lake Erie. The rest was much needed, as he has been overworking for sometime. He now feels considerably invigorated and has gone to work with renewed energy on his "Methods of Taxidermy." He now has 200 subscribers and expects to issue a prsspectus soon, with five of the plates of intended for the work, which will be sent to all subscribers and others interested in taxidermy.

The price of the work after publication will positively be raised to $7.50 net. The discount on the work will be so small that no dealer can sell it for less than $7.50. We trnst that Prof. Davie may be able to secure the 300 additional subscribers necessary by January 1, 1891, in which case the work will go to press at that date. Send for a prospectus and subscribe at once.

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*Cosmopolitan, monthly	2.40
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" " Supplement, wkly.	5.00

*The Cosmopolitan is really a $4.00 magazine.

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A 52-inch Columbia Bicycle for exchange. In good repair. E. T. KEIM, Box 69, Kansas City, Mo.

Three copies of "Curiosity World" for one of "American Journal of Archæology, or "American Geologist." G.L.HOWE, Granger, Oregon.

A copy of "Steel's Botany or Astronomy" for either three copies of "American Journal of Archæology" or "American Geologist." G. L. HOWE, Granger, Oregon.

For three copies of "American Geologist" or two copies of "American Journal of Archæoligy," I will give 18 numbers of "The Oologist. G. L. HOWE, Granger, Oregon.

A large collection ef Lepidopterous Inseets from North and South America, Europe and Asia. Will exchange for species I do not have, or will give Lepidoptera for good fossils. Live pupae and cocoons on hand. R. R. Rowley. Curryville, Pike Co., Mo.

WANTED. The fourth Ill. Geol. Survey and the fifth Ohio Geol. Survey. Will exchange upper coal measure fossils for same. Sid. J. Hare, 2415 E. 13th St. Kansas City, Mo.

TO EXCHANGE: First-class singles or original sets with data in full for first-class original sets with data in full. Lists exchanged. CHAS. H. CULP, Gilroy, Cal.

THE EDITOR of THE NATURALIST desires to exchange for Oologist specimens not in his collection. Send list and receive his.

WILL EXCHANGE mounted birds and skins for birds not in my collection. Also first-class eggs. W.H. PARKER, Taxidermist, Abilene, Kansas.

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Encyclopedia Britannica, Edinburgh Subscription Edition (Ninth).

It is published by Adam and Charles Black. Edinburgh, and imported for the United States and Canada by CHARLES SCRIBNERS' SONS, NEW YORK.

YALE UNIVERSITY, New Haven, Conn.

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The Naturalist.

VOL. IV. KANSAS CITY, MO., NOVEMBER, 1890. NO. 12.

For THE NATURALIST:

The Mound Builders and the Brass Button.

In a *brochure*, issued from the National Bureau of Ethnology, Professor Thomas details the recent work of the bureau in mound exploration and offers the following as indebatable results arrived at:

First, that the so-called Mound Builders were identical with the race popularly known as "Lo, the poor Indian," and second, that many of the mounds heretofore attributed to them, were erected after the advent of the whites. This view is also advocated by Major Powell, the director of the bureau, in several recent papers. Of course the force of the first conclusion depends largely upon the correctness of the second; and this again, whether correct or not, cannot affect the issue unless it be conceded that the constructions of the modern redskins are undistinguishable from the *tumuli* which the benighted predecessors of these savants supposed were raised by a prehistoric people. The method by which the above conclusions were reached is indicated by illustrations of the following character:

In a Wisconsin mound "which stands in the midst of a group of effigies, was found, lying at the bottom, on the original surface of the ground, near the center, a genuine, regularly formed gun-flint. In another, in Tennessee, some six feet high and which showed no sign of disturbance, an old-fashioned, horn-handled case-knife was found near the bottom."

Verily such finds are posers to the old school archæologists who cling to the antiquity of the mounds; that is, if it is an unquestioned fact that in the instances named the mounds were the same in character as those ascribed to the mound builders, and that there was no possible means for the intrusion of the relics. Yet there is some comfort left; for it will be recalled that a few years since an explorer discovered in an ancient tomb in Mesopotamia a well preserved ear of maize, a grain indigenous to America and unknown to the Old World until after the voyage of Columbus, and Dr. Clarke, in in his celebrated "Travels etc.," tells us that in the ancient mounds of Scythia, well preserved gun barrels are occasionally found lying in juxtaposition to articles of a known antiquity antedating the discovery of gunpowder; but the most remarkable instance of this nature, is the fact attested by the naturalist Pallas, that volcanoes in the Taman peninsula have been known to cast up Greek and Scythian pottery—which would seem to indicate a spurious manufacture of volcanoes.

These instances illustrate the curious and suggestive fact that archæological frauds are not all confined to the fabrication of antiquarian curios; that it is just as easy to destroy as to build up the reputation of a supposed relic of antiquity. Those who recall the conduct of an emissary of the Smithsonian Institution during the exploration of mounds opposite Dubuque, some years ago, will know what is meant.

But it is not intended to dwell on this aspect of the case. It has long been known that finds of the character indicated by Prof. Thomas were occasionally made, and, wherever they seemed to obfuscate the mound-builder theory, attempts, more or less successful, were made to explain away their apparent bearing on the subject. Such a find once occurred within the experience of the writer and, as it was investigated at the time, it may be useful to detail the circumstances.

Some years ago, while convalescing from a severe illness at Rockport, Ill., I used the idle time at my disposal exploring the many vestiges of mound-builder industry in the neighborhood. With a light spade I dug into many of the mounds, being the victim meanwhile of the jocular sarcasm of rustic wags. One day as I sat in the shade of a tree on the edge of a bluff, upon which was a large mound which I proposed to open as soon as I could recover breath from the climb, a tall, well dressed stranger made his appearance and, after examining my rather emaciated figure and toy spade, with a quizzical glance asked what my errand was at such a spot and with such a utensil. I gave him an account of myself and was surprised and pleased to find that he was engaged in the work of exploring the mounds also, and in some official capacity, the nature of which I don't recall nor do I remember his name. We agreed at once to attack the mound in concert and, as he had a laborer with him to do the heavy work a trench was soon dug through the center of the mound to the level of the surrounding ground. During the work of excavating I discovered to my dismay that the gentleman had strong doubts of the antiquity of the mounds and I thought an eagerness on his part could be detected to turn every fact in such a way as to favor his opinion. Indeed we got into as much of a controversy as an experienced and educated man would permit when his adversary is a green youth. During the morning we found several relics in the form of bones, pottery-shards, beads, etc., and at last I discovered a metallic object, black from oxidation and dirt, sticking in the side of the excavation, about a foot from the bottom, and pulled it out for examination. Upon cleaning it we found it to be a brass button and, *miribule dictu*! a military one, a genuine overcoat button such as Uncle Sam's soldiers wore during the then, very "late unpleasantness." I know it was identical with these for we compared it with the buttons on the coat of the laborer who, like so many other persons at that time, possessed one of these overcoats which lay on the ground near by. The mirth of my companion over the circumstance was very unseemly and when we parted that evening I was "almost persuaded" that his view was correct.

In truth I had been so nonplussed over the find that several facts pertinent to its explanation did not occur to me until I got back to town. Then I suddenly remembered that there had been no Indians in Pike county (except an old half-breed squaw, who lived "up the creek" and had the reputation of being a witch) for at least thirty years—this was in 1867—while the oldest inhabitants declared that the mound in question had been there since they were children. It was plainly evident therefore that neither the Davenport Academy nor any other modern institution had built the mound and, as there has been no Indians in the county during or after the civil war the button could not be accounted for by supposing an intrusive burial, unless, indeed, the whites of the neighborhood had buried one of their number there "with his martial cloak about him." This, from the height of the bluff and for other reasons, was altogether improbable. Puzzling over the problem thus presented I determined to make another visit to the mound on the morrow and make an effort to clear up the mystery.

When I reached the spot it was just in the condition I had left it. There could be no doubt of the fact that the button had been picked out of the excavation within a few inches of the original surface of the ground and that it had lain in close proximity to the human bones we had discovered. But now on a closer examination I discovered that immediately around the indentation where the button had reposed the earth was a shade darker than that of the general face of the excavation and I commenced to dig into it to account for this fact. I very soon discovered that I was following a streak of dark earth that extended nearly at right angles to the trench, in a direction that would bring me out about midway up the western side of the mound. Therefore I went there, and investigation showed a cup-shaped depression which, as a few strokes of the spade determined, was unmistakably the entrance to the burrow of some animal, now long disused and filled with dust and the wash of rains. To make assurance doubly sure I excavated the burrow from top to bottom and found that it led directly to the resting place of Uncle Sam's button.

It was now easy to account for the presence of the button in the mound. Laying aside the possibility that the animal which once owned the burrow had made his nest out of a fragment of a cast off garment, it is only necessary to recall the disposition, so common in children, to take articles, such as pebbles, bullets, buttons, etc., into holes and secret places, to relieve the circumstance of all elements of mystery and marvel. The spot had always been a favorite haunt of children of the neighborhood and on some occasion, while the burrow was yet open, the button had been accidentally or designedly dropped into it from the fingers of some playful child and had rolled to the bottom. Thus it was that this insignia of modern warfare was found nestling among the bones of an old warrior who had passed to the happy hunting grounds centuries, perhaps, before Uncle Sam was born.

The moral of this incident is easily read. Caution is good; conservatism is good; but caution and conservatism may be quite as apt to be led astray by appearances as radicalism and enthusiasm.

WARREN WATSON.

The announcement of *The Youths' Companion* for 1891 has been received. It is a tasty little souvenir. The list of able writers for the ensuing year bids fair to make it more fascinating than ever to its nearly 500,000 subscribers. Among the able contributors to this popular weekly will be Lord Coleridge, Chief Justice of England, Jules Verne. The Marquis of Lorne, and Princess Louise, Prof. C. A. Young, of Princeton University, and Lieut. J. E. Pillsbury of the United States Navy.

FOR THE NATURALIST.

THE BURLINGTON GROUP OF ROCKS.

R. R. ROWLEY, CURRYVILLE, MO.

The Lower Burlington Limestone at Louisiana directly overlies the Vermicular Sandstone, and caps most of the hills in the eastern part of Pike County. It consists of white and brown strata of very hard limestone, the layers varying from three feet near the base, to a few inches in thickness above. The stone is of an excellent quality, and the uses to which it is put are many and various.

The H. L. Hart Quarry Co., of Louisiana, is one of Pike County's most substantial enterprises, and beautiful and valuable stone is shipped to points in Iowa, Ill., and other Mississippi Valley States. The Burlington Limestone is crowded with the remains of Crinoidae, mostly stems and detached plates. Other fossils are less numerous, but all the branches of the animal kingdom, from the Protozoan to the Vertebrate are represented. The stratum at the base of this limestone, for convenience, may be called the *Batocrinus calvini* horizon and contains a very interesting fauna, of which *B. calvini*, and two or three kindred species are the most characteristic fossil. Besides the *Batocrinoids* there is a very gibbous *Spirifera* close to *S. marionensis* but probably distinct, an *Athyris*, *Orthis swallovi*, *Strophomena rhomboidalis*, a *Productus*, *Syringothyris hannibalensis s* (?) *Zaphrentis calceola*, two other *Cyathophylloids*, *Leptopora*(?) *sp*? *Granatocrinus melo*, a large *Dorycrinus*, an *Actinocrinus* like *A. proboscidialis*, an *Agaricocrinus* (new species), a large *Rhodocrinus* probably *R. whitii*, *Batocrinus*, *Ichthyocrinus sp*?, *Poteriocrinus meekianus* ? two or three species of *Platycrinus* and one Gasteropod mollusk(*Playceras* sp?).

This is a mixed Burlington and Kinderhook fauna, but the Crinoidal remains refer the stratum to the former group of rocks.

Above the *Batocrinus calvini* bed are two or three layers containing an abundance of Molluscan remains, and I shall designate this horizon as the *Spirifera grimesi* division. The fauna embraces *Zaphrentis calceola* two or three other new species of *Zaphrentis*, *Z. elliptica*, a *Cyathaxonia*(??) sp? a number of undetermined *Bryozoa*. *Orthis swallovi*, *Orthis sp*? *Strophomena rhomboidalis*, *Terebratula burlingtonensis* *T. rowleyi*, *Chonetes logani*, *Rhynchonella*, *missouriensis*, *R. ringeus*, *R. boonensis*, *Spirifera peculiarsis*(?), *S. solidirostris* *Athyris incrassata* several species of *Productus*, *Retzia*, *Playceras*, *Euomphalus latus*, *Loxonema*, *Pleurotomaria*, *Goniatites*, *Nautilus*, *Phillipsia* (three species), *Conularia*, *Crania*, *Lingula*, and a few fish teeth also found in the *B. calvini* bed. I have not attempted to give a list of the fossils of this middle horizon, mentioning only the most common forms The sutures separating the layers are usually covered with broken valves of *Spirifera grimesi*.

Of Crinoids and Blastoids, the most common species are *Batocrinus longirostris*, *Dorycrinus unicornis*, *D. subaculeatus*, *Eretmocrinus coronatus*, *Actinocrinus clarus*, *Granatocrinus*(2 or 3 species), a small *Codaster*, and a little *Codonites*, not *C. gracilis*.

The rest of the Lower Burlington Limestone I shall call from its most characteristic fossil the *Granatocrinus melo* horizon. These are of course, the upper layers of the series which are largely made up of Crinoidal remains. The genera represented are *Actinocrinus*, *Batocrinus*, *Dorycrinus*, *Eretmocrinus*, *Cyathocrinus*, *Calceocrinus*, *Synbathocrinus*, *Rhodocrinus*, *Meyistocrinus*, *Agaricocrinus*, *Amphoracrinus*, *Platycrinus*, *Dichocrinus*, *Granatocrinus*, *Codonites stelliformis*, *Codaster* and *Troostocrinus*. The Lower Burlington Limestone contains more or less chert in rounded masses of all sizes from a pound in weight to a hundred lbs. These nodules of chert are to be found all through the beds, but are most abundant near the sutures and sometimes appear as a thin stratification. The outside of some of these nodules is often soft, and in weathering, leaves most perfect and beautiful snow white fossils, priceless treasures for the cabinet. In the harder centers of the flints, magnificent natural casts are occasionally found, of Gasteropods, Brachiopods and Crinoids, some of them thickly set with small transparent quartz crystals which reflect the light from their facets like so many diamonds. An occasional specimen of *Spirifer* or *Athyris* is found so perfectly preserved, that by the removal of one valve the internal spiral coils appear like delicate, beautiful threads of silica.

The Upper Burlington Series at Louisiana is represented by loose cherts scattered over the hill tops and along the streams. Near Curryville, there are a few feet of hard white and brown limestone, with heavy layers of chert, but nowhere in the county is there any great thickness of this rock. At an outcrop of the limestone in Spencer Creek I have found a beautiful specimen of *Zeacrinus* like *troostanus*, *Schizoblastus sayi*, *Granatocrinus norwoodi* var *fimbriatus*, *Batocrinus pyriformis*, *B. christyi*, *B. aequibrachiatus*, *Agaricocrinus* probably *americans*, *Dorycrinus intermedius*(?) *Teleiocrinus sp* an *Actinocrinus*, a *Calceocrinus* etc. The cherts yield an abundance of most excellent natural casts of Crinoids and Blastoids together with a few Brachiopods, Gastropods and Corals. Among the most commmon species of these casts are *Strotocrinus umbrosus*, *S. sub-umbrosus*, *S. glyptus*, *S. regalis*, *Physetocrinus ventricosus*, *Agaricocrinus bellitrema*, *Dorycrinus missouriensis*, *D. cornigerus*, *Batocrinus pyriformis*, *B. christyi*, *B. aequibrachiatus*, *Dichocrinus lineatus*, *Platycrinus*(half a

dozen undetermined forms), *Saccocrinus amplus*, *Ollacrinus tuberculosis*, *Rhodocrinus* (2 species), *Actinocrinus scitulus*, *Amultiradiatus*, other species of *Actinocrinus*, *Eretmocrinus* (several species) *Geranatocrinus nowoodi*, *Schizoblastus sayi*, *Pentremites elongatus*, *Codaster* (2 or 3 undetermined species), and *Troostocrinus sp?* Perhaps the finest and most showy Crinoid from the Upper Burlington chert is *Strotocrinus regalis*. All of the casts are fine objects for study and no student's cabinet is complete without a suite of these most instructive and very showy Crinoids. This series of articles on the palæozoic rocks of Pike County began with the Edgewood outcrop supposed to represent the upper part of the Hudson River Group, and ends for the present with the Upper Burlington Limestone. The series is not complete, since it neither begins at our lowest rocks nor ends with the highest. There are two groups below the Edgewood beds, (The Trenton and Hudson River proper) and two above the Burlington (Keokuk and Coal Measures).

IMPORTANT GEOLOGICAL FIND.

FRAGMENTS OF A FOSSIL'S REMAINS UNEARTHED IN A SANDSTONE QUARRY IN THE TOWN OF MANCHESTER, CT.—PROF. MARSH OF YALE AT WORK ON THE DISCOVERY.

Mr. H. T. Woodman, of New York City, sends the following, condensed from the Springfield *Republican*. He says: "There is not a shadow of doubt but that the reptilian bones here referred to are of a species of reptile whose footprints are found in great abundance in Massachusetts and Connecticut, and which for many years were regarded as belonging to, or made by, some unknown bird."

At the sandstone quarry of Charles Wolcott, in Buckland, near Manchester a fossil has been discovered which is in all probability the most important geological discovery of the nineteenth century. The finding of remains of this antediluvian, date back some six years, and although the greater part of the reptile's frame has been mounted and is in the museum at Yale, the facts have not been known to the public or scientific men in general. The creature is one whose many footprints in the sandstone from the vicinity of Amherst and Northampton, in Massachusetts, can be seen in most of the large college collections of the country. These fossils were first noticed imbedded in the sandstone which was blasted some 38 feet from the surface in the center of the quarry. They were apparently the vertebræ of some animal and as other pieces of the sandstone were broken more pieces were found. In breaking one piece of stone the head was split in twain, the lines of the face and nose being similar to those of a large Newfoundland dog. The feet and hands with claw-shaped fingers and toes were also plainly imbedded in other pieces of the stone, and the relation of the parts of the animal, while yet in the stone, to each other took the form of a large lizard shaped creature about eight feet in length. Charles Owen, of Manchester, hearing of the discovery and at once realizing its importance, informed Prof. Marsh of Yale college. The well-known geologist had no sooner received the information than his representative was sent to Buckland to obtain the specimen. Mr. Wolcott had been advised by one of his neighbors not to sell the fossil for a small sum, but $50, the offer of the Yale man, was a fair price for common sandstone and he at once agreed to part with it. On further examination it was found that the head and foreshoulders of the fossil were missing. Then it was learned that the pieces of sandstone containing them had been sent to a bridge in the southern part of the town and were doing their share of work in the abutment which formed a part of its construction. When Prof. Marsh heard that the fossil was not complete, he offered Mr. Wolcott $1,000 to secure the remainder of the reptile. The discoveries of last month are of a slightly different nature. The block containing these fragments was quarried from the same ledge from which the reptile was taken. While not parts of that fossil, these evidently belong to a representative of the same species. Clearly outlined in the red sandstone is a joint, which seems to correspond to that in a man's wrist, and two long, talon-like fingers, the ends of which are firmly imbedded in the stone. The block containing this "find" has been broken in two pieces, the bones in one being merely the converse of those in the other. In time both blocks will be forwarded to Prof. Marsh, under whose careful chiseling much that is interesting and important, but as yet concealed in the sandstone, will doubtless be brought to light. In connection with the first discovery it is a somewhat remarkable fact that Prof. Marsh had predicted it from his study of the traces of the reptile as revealed in the various formations in Western Massachusetts. He even wrote a magazine article on the subject, in which he said that Connecticut would doubtless have the honor of making this important contribution to science. As if to verify his statement, the discovery was made while his article was in proof and he was enabled to add in a foot note an outline of the facts regarding it. He regards the fossil as especially important in establishing beyond doubt some of the hitherto uncertain points in Darwin's claim of theories and promises.

A Lady Naturalist.

At the recent congress of Scientists, at Berlin, Fraulien von Chauvin attracted much flattering attention. Poor health prevented her from attending school, but she concentrated all her interest in the study and observation of animal and vegetable life. She has, by her ingenious experiments and discoveries, proved herself a natural scientist of the first class, and enjoys a wide and general reputation as such. Her aviary is a regular "happy family," where she, as she says, by her love, forces the most diffident animals to live peaceably together. Vultures, pigeons, ravens, owls, fowls, a parrot, a stork, peacocks, ducks, etc., all get on together in the best possible manner, and know and obey the voice of their mistress. A Siamese cat has its quarters in the same cage as some Egyptian rats; but they take no notice of each other. Fraulien von Chauvin's collection of butterflies is the most perfect in Germany. Within the vegetable world this gifted lady has wrought many wonders. Her health does not allow her to read or write much, but one or two of her treatises have attracted great attention.

Where Some of Missouris' Fire-Clay Goes.

Fireclay, produced in Missouri, is used extensively by the Kokomo, Ind. plate-glass works, in constructing the large melting pots which are required to hold from 1,000 to 2,500 pounds of molten glass. The clay is first mixed to the proper consistency by men with their bare feet, when it is made into small rolls, and laid aside for future use. The making of these pots is slow work, as one man can only complete eighteen in twelve days. The workman uses the rolls, and adds about six inches a day to each pot, which allows ample time for drying. Nothing has been as yet devised to take the place of the human hand in the very particular work required in constructing these immense pots, which, when completed, bear the initials of the maker as well as the date, and all are then allowed to "season" for a considerable time before being used. The life of a pot in constant use is about thirty days.

A very superior quality of Clay suitable for this purpose is found on the proerty of the Lythia Springs Improvement Co., located within five miles of Kansas City.

A Pair of Captive California Quail Lay Twenty-four Eggs.

A pair of captive California Quail, in possession of a Kansas City bird store, laid twenty-four eggs since received here some months since. The proprietor only asks $5 a pair "for the dear little things."

Missouri's Geological Survey.

Prof. Arthur Winslow was in town recently. On account of the penuriousness of a Fourteenth century resident of Kansas City, the Professor was unable to obtain descriptions of certain drill holes, which he especially desired. What a blessing it is all people are not alike!

In marked contrast to the above, Mr. L. J. Talbott, treasurer of the Randolph Coal Mining Company, instructed his superintendent, Mr. Oliver Hutchinson, to place at Prof. Winslow's disposal any information concerning the mines he desired. And through the same courtesy the Professor was taken to and through the mines. He examined them carefully with a view to a full description in the forthcoming report, which will contain detailed maps on a scale of one inch to the mile,on which the topography and geology of the state will be shown. These maps will also give the location of all openings and exposures such as outcrops, drill holes, wells, shafts and pits in coal, clays, building stones and other substances of value, accurately defining their distribution.

The quantity of these substances contained on each man's land and their depths beneath the surface will be further given, so that every land-owner will find information of value to him. There will be numerous illustrations of sections, descriptions of all openings and drill holes, and the results of analyses and tests, information which the survey has diligently gathered and which will now be published and put on record for reference for all time.

Other lines of work of the survey carry it into all sections of the state; but work of the character spoken of above is in progress in portions of ten counties, and an area of nearly 2,000 square miles will be finished this autumn.

This report will be of great value to Missouri, and will compare favorably with similar reports from other states.

Considering the very small appropriation, the work accomplished presents a very creditable showing and the state is to be congratulated upon the wise selection made by Gov. Francis for state geologist, and especially since Prof. Winslow has begun by doing thorough and exhaustive work wherever he goes, which he considers preferable to passing over the ground superficially, merely for effect. We will have to wait a little longer for results, but when these come they will be all the more valuable. It is safe to say that no Missouri library will hereafter be complete which does not contain Prof. Winslow's geological report.

We are always pleased to see the Professor and trust he will make it a point to hunt us up whenever he is in town. For the information of the readers of THE NATURALIST, we will say that arrangements have been made whereby the work of the state survey will be furnished the editor of this publication and given from time to time to our patrons.

Fifteen Bears and Two Hundred Wolves to the Square Mile, or "As Numerous as Rabbits."

One of our exchanges attributes to the American rifle, the almost total extermination of the larger carnivera of this continent, and states that "within the past fifty years wolves and bears have entirely disappeared from hundreds of thousands of square miles where they once were as numerous as rabbits." We haven't the remotest idea what particular patch of rabbits the writer had in view. Again, it would appear vastly more probable to a thoughtful person and would no doubt come nearer to the truth, were we to declare that wolves and bears are found in their native haunts to-day in every state and territory in the Union. Hyperbole is cheap with some editors.

Sequoia Trees.

The Interior Department is probably the most important of the executive branches of government. Secretary Noble's responsibilities are numerous and arduous, having supervision of pensions and bounty lands; all public lands, including mines; the patent office; Indians; education; railroads; public surveys; the custody and distribution of public documents; the census, etc.

Exercising his prerogative he has withdrawn from entry the tracts of land in California's Sierras, covered with Sequoia groves, or big trees. The design is to have Congress set them apart as a permanent reservatory that they may be preserved for all time, or until they perish from natural causes.

In California *Sequoia giganta* occurs chiefly in groves at an altitude averaging 4,500 feet above the sea; appearing to be the remains of a once extensive forest belonging to a past epoch. Some of these vegetable monsters have obtained a height of more than 400 feet.

In withdrawing these lands from entry, Secretary Noble has made numerous friends for himself in California, and deserves the hearty thanks of every American citizen possessing an atom of pride for his country's greatness or a love for nature.

The smallest plant that bears flowers is *Wolfic microscopia*, a native of India.

Minerology.

Contributions for this department should be addressed to David H. Todd, 1217 Cherry St., Kansas City, Mo.

ONYX.

Recent reports from the Big Bug mining districts of Arizona, announce the finding of one of the largest deposits of onyx in the world, extending a distance of 3 miles. It is also reported that mills will be erected and quarries opened. The immense value of such a deposit can hardly be estimated. If this report is true it will have a tendency to cheapen the product.

Reports also come of the finding of another large deposit of onyx. This time near home and within 75 miles of St. Louis. The discovery was made by Mr. Horace E. Rood, of St. Louis, who owns the entire tract of 300 acres. It is found susceptible of the highest polish and is very beautiful in having delicate tints of chocolate to an almost transparent white.

CUPRITE.

Recently a pocket of a beautiful form of cuprite was found in one of the mines in the Moriencey mining district of Arizonia. The cuprite is known as the variety of *chalestrichite* or *capellany* form, The color is from a rich vermillion to a beautiful brown and wine color, and has a very bright and pleasing effect by artificial light. This is a rare form of cuprite and specimens of this variety are highly prized. There was only a limited quantity obtained. Several members of the Academy were among the fortunate few to secure a series of these interesting specimens.

ALUMINA.

At Steamboat Springs, Nevada, an enormous deposit of alumina is reported. It is said to be as white and clean as chalk. Alumina has become a very useful mineral in mechanical purposes and its future market value will depend much in the manner in which it is extracted from its natural substances.

Near Humansville, Mo., a rich vein of lead ore has been discovered.

A good vein of coal was discovered on a farm near Springfield, Mo., the other day.

A careful inventory of the salt wells of Hutchinson shows none are missing. Jay Gould was there recently.

Gold is worth about $240 a pound troy. This is not very expensive when compared with Barium, at $975 a pound: Calcium, $1,800 a pound; Cerium, $1,920 a pound, or Gallium, at $3,250 an ounce.

The Naturalist.

R. B. Trouslot, Editor.
Assisted by E, Butts, E. T. Keim, David H. Todd and Sid. J. Hare.

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—Re-organized 1889—

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EDWARD T. KEIM, *Treasurer.*
FREDERICK MCINTOSH, *Librarian,*
SIDNEY HARE, *Curator.*

KANSAS CITY, NOVEMBER, 1890.

AN Albino Opossum is reported by Nicholas Shurn, of Saverton, Mo.

EXCHANGES finding this item *marked* will please address their papers hereafter to Frederick McIntosh, Librarian Academy of Science, Kansas City, Mo.

AND when you find this item *marked* your subscription has expired.

THE best $4.00 monthly magazine is none other than *The Cosmopolitan*, of New York, which can be had for only $2.40. Subscriptions may be sent to this office.

PILSBRY'S Nomenclature and check-list of North American Land Shells, lists 302 species, being all the species of land Pulmonata known to the author to inhabit America north of the Mexican boundary.

PROF. L. L. DYCHE of the Kansas State University, Lawrence, with Mr. E. L. Brown of Warren, Minn., as his assistant, is prospecting for "big game" in the vicinity of the Lake of the Woods. With Prof. Dyche, the readers of THE NATURALIST are already well acquainted. Mr. Brown is a promising young taxidermist of several summers and winters experience in camp life, specimen hunting. We believe the Prof. could not have chosen a more suitable companion.

The Naturalist, Volume Five.

With this number ends volume IV of THE NAUTRALIST. We have always put forth or best efforts, but circumstances most of the time were against us, and it was only with a struggle that the paper was continued before the public. We take this opportunity of thanking you for the kindness that has been extended to us in many ways.

With the next issue will begin volume V. To the many supporters of the past we pledge our best efforts for the furure. Through the Academy of Science, of this city, we are able to continue upon a new basis. A guaranteed fund has been pledged to insure the prompt appearance of THE NATURALIST, at a stated time each month, and its control will be entirely entrusted to a committee who will use every effort to make it first-class in all respects.

The Editorial and Business Management will receive careful consideration, and will be in the hands of men whose hearts as well as cash are interested in the cause of science. Mr. E. T. Keim will have charge of the Busines Management. R. B. Trouslot, who has so ably stood by THE NATURALIST, publishing it during the past three years at a loss of considerable time and some money, will be editor-in-chief.

Mr. E. Butts will have charge of the Department of Archæology. He has a large Archæological collection and an extensive library. Being a tireless worker and a close student the readers of THE NATURALIST may expect much valuable information from this source.

Mr. Sid. J. Hare will be in charge of the Department of Palæntology, and will see that all articles intended for that department are up to the standard.

David H. Todd will look after the Department of Minerology. Recent discoveries of new materials will be described. The mineralogist, miner and general public will find this department one of the interesting features of the paper.

Aside from the members of the Academy who may all be called contributors to our columns, the following have consented to give, from time to time, articles that are sure to be of interest to the readers of THE NATURALIST:

Prof. Arthur Winslow, State Geologist.
Hon. Warren Watson.
Noble M. Eberhart, Ph. D.
Prof. R. R. Rowley.
Prof. Edwin Walters, and others.

Contributions pertaining to Art and Literature, as well as Science, are solicited.

With the prompt appearance of THE NATURALIST guaranteed for 1891; assisted by so many able thinkers and writers, we trust our old subscribers will remain with us and that many new ones will be secured.

COMMITTEE.

PERIODICALLY during the past ten years there has gone the rounds of the newspapers an interesting story concerning the destruction of the "last herd" of wild American Bison. The latest destruction meditated of this "last herd" emanates from Laramie, Wyoming, and consists of a trio of Laramie's sports, accompanied by a couple of expert lassoers. They have sighted their game and expect to return with a half dozen or more of the noble brutes. We wish them success, of course. Their object, the capture of the Bison alive that their species may increase and be perpetuated would be a noble one were it pursued with no thought of gain. Full-blooded American Bison having an average price of $1200 to $1500 each, the hunters, if successful, will be amply rewarded, though there is considerable doubt about theirs being the "last Buffalo hunt in the United States" or even in Wyoming.

THE regular meeting of the Kansas City Academy of Science was at the office of Frederick McIntosh, Bayard Building, Tuesday evening, October, 14, 1890, President Walters in the chair. After disposing of the regular routine work, the Secretary presented an account of the receipts and expenditures attending the Academy's display at the Inter-State Fair which showed that all expenses were paid and a small balance left in the Treasury. The Academy received three first premiums, two second premiums and honorable mention. The display was very full and complete.

Prof. Walters read a paper entitled "The Mission of Science." Upon the conclusion of the reading, a discussion of the paper ensued. Remarks by Messrs. E. Butts, S. J. Hare, D. H. Todd, C. W. Dawson, E. T. Keim and F. W. McIntosh.

Mr. E. Butts presented the following names of fossils to be added to the list already prepared:

268—Aesiocrinus lykinsi.
269—Aesiocrinus basilius.
270—Agassiocrinus variabilis.
271—Archæocidars triserrata.

The program for the next meeting is Loess Formation, Sid. J. Hare; Elementary Minerology, Dr. O. Bracklein.

R. B. TROUSLOT,
Secretary.

MR. WM. PALMER, of the National Museum, has recently returned from a protracted collecting tour on the Fur Seal Islands in Behring Sea. He has a large series of skins of the birds and mammals of these islands, but is especially happy in having secured a species of Cuckoo, not heretofore attributed to our country.

SUBSCRIPTIONS are now in order for Vol V. Do not delay.

ACCOMPANY your subscription with an exchange notice for free insertion in the next issue.

MANSFIELD has sold his collection of antiquities for $20,000.

ABOUT 2,000 species of insects, on an average, have been discovered yearly during the last century.

THE twenty-third annual meeting of the Kansas Academy of Science was held at Lawrence, Kas., November 5, 6 and 7. An interesting program was arranged, one of the features of which was a reception tendered visiting members by the University Science Club.

AN exchange calls this the cute age, from the fact that some furniture factories have workmen who imitate worm holes in furniture, to give it the appearance of antiquity. A few dozen larva of *Chrysobothris femorata* once introduced would soon antiquate the best piece of furniture ever made.

SAY, Mr. Pittsburg *Dispatch* man! Please give us the name of the "planter" who lives "on a small island in the middle of the South Pacific" and keeps for a pet a sperm whale of great size. What's the name of the island or group? What kind of "chopped meat" does he feed him? Natives?

AN Ottawa, Kas., man has a rooster which is so large that it has to be helped onto its perch every night—*Ex.*

MRS PENSCHOWER, of Cloverdale, Cal., has raised a sunflower this year that breaks all records. The stalk is six inches in diameter at the ground. It stands twelve feet high, and the flower measures nine feet around the outer edge.—*Ex.*

The rooster was evidently made to eat the sunflower.

Reviews and Exchanges.

TOKOLOGY, A BOOK FOR EVERY WOMAN. by Alice B. Stockham. M. D. 324 pages; Illustrated. Revised edition, Alice B. Stocham & Co., 161 La Salle St., Chicago, For sale by the publishers, Cloth $2.00; Full Morocca $2.75, postpaid.

Among the many books published treating of Maternity, none have come to our notice that handles the subject more delicately or scientifically than Tokology. Written by a woman, a physician as well as mother, she gives her readers the benefit of both knowledge and experience. Her style is simple, and there being but few technical terms, the dullest can easily understand. Tokology is indeed a "boon to every woman," treating also of dyspepsia, constipation, headache, neuralgia, biliousness, etc.

It is unquestionably a noble work and we willingly endorse the volume, knowing that if women follow its teachings their manifold miseries may be greatly alleviated, if not entirely overcome.

VICKS' ILLUSTRATED MONTHLY MAGAZINE, Published by James Vick, Seedsman, Rochester, N. Y. Yearly subscription $1.25.

The November number of this valuable little magazine is replete with good suggestions, modern ideas, and practical hints. It is, in short, *multum in parvo*. Among its instructions upon window gardening, we note a few errors which from common observation seem to be frequent, that of keeping the air of the room too dry, having no fresh air, uneven temperature, and failure to sun both sides of plants. Other interesting points discussed in this number are "Training American Grape Vines," "Winter fruits and Berries," the "Vinca Minor," "Raising Roses From Slips," and plant life in general. The full page plate illustrating the "Single Hyrethrum," in three colors, as a frontspiece, is beautiful.

THE KINDERGARTIN for Teachers and Parents, an illustrated monthly educational magazine, published by Alice B. Stockham, has been reduced from $2.00 to $1.50 per year.

In November number is the fifth article in the series on "Frœbels System," by Baroness von Marenholtz Bulow. The "Being of the Child" is discussed ably, showing the importance of home-training and advantages of kindergartin work to the child. Frœbel is studied from a scientific standpoint, all the way through this Magazine, and its clear explanation of scientific principles is an especial aid to the primary teacher.

Major McKinley—Protection.

"Yes-sir-ree," we believe in protection and if it were not too late, would suggest to Maj. McKinley the advisability of canceling all custom duties on high colored foreign bird's skins. So long as brainless man-milliners insist that birds must be slaughtered to satisfy a "rising market," which they excite by displaying "decoys" gotten up for the express purpose of attracting the susceptible gaze of female passers by and shop frequenters, the nefarious traffic in bird's hides will continue. So long as this traffic is bound to exist, and it only remains a question of dollars and cents where the supply comes from, then by all means give us protection for our own dear native birds. Knock the duties off and permit dealers, "scot free," to flood the country with foreign feathers.

That is the kind of protection we believe in, so far as our birds are concerned—one sided, perhaps, but we can console ourselves with the thought that if the "natives" appreciated their feathered friends they would not kill them.

The Markets.

Both species of Jack Rabbit are nearly always found in our markets during cool weather at from 20 to 30 cents each.

Opossums range in price according to size and condition from 25 to 75 cents.

Wild turkeys are few, but those noticed so far are small and rather poor looking, and not at all suitable for the taxidermists' skill.

Quail, the common Bob White of the natives, are here in great abundance at $1.75 per dozen.

Pinnated Grouse are to be had at from 25 to 50 cents each.

Ducks are coming in in great variety. Mallards and Teal predominating; Pintail and Sheldrake are also frequently noticed. Good specimens can usually be had from 25 to 40 cents each.

Deer are frequently shipped whole, and occasionally a bear falls to the sportsman's luck. The latter never remains on the market long, however, being considered a delicacy by some of Kansas City's pricipal caterers.

Kentucky Warblers in Penn.

J. P. Norris, Philadelphia, Pa., is Oological editor of Webster's *Ornithologist and Oologist*. He has a couple "chips off the old block" who are as indefatigable collectors as himself. In that excellent magazine, the *O. & O.*, J. P. N., Jr., describes the taking by himself and brother of eight sets of Kentucky warbler eggs, seven nests of young birds, and two deserted nests. "As the twig's bent, the tree's inclined."

American Ornithologists' Union.

The eighth meeting of this organization will occur Tuesday, November 18th. at the National Museum in Washington.

It is claimed that the mines along the Union Pacific produces annually over 1,400,000 tons of coal.

We devote the eighth page of this issue to a few words in our own behalf, and trust all prospective advertisers will read it carefully and then act promptly. The first to come will be first served.

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—BY—

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14 *Cypraea Arabica*, E. I.
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33 "Electric" Stone, Jeff. Co., N. Y.
34 Sand Shark Egg, Atlantic
35 Flexible Coral (*Melitea*), Tongo Isles)
36 Limpet, Bahamas
37 Bloodytooth Shell, Nassau
38 Fossil Shark Tooth, S. C.
39 Operculum or Shell Door, Bahamas
40 Native Lodestone, Magnet Cove, Ark.
41 Olive Shell, Zanzibar
42 6 Guinea Fowl Feathers, Africa
43 6 Guinea Fowl Feathers, Bahamas
44 2 Egg Capsules of Periwinkle, Atlantic
45 Piece of Lontah, Japan
46 Piece of Tapa Cloth, made by the Natives of Samoa Isles

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Antelopes are also remorseless enemies of rattlesnakes. His snakeship can only strike from a coil—a fact of which the antelope seems well informed. He will cautiously approach his coiled and buzzing enemy and by stamping and extending his forefoot, tease it into striking. In that event the foot is quickly withdrawn and before the rattlesnake can re-coil, the antelope has jumped upon his outstretched form with all four feet. Every hoof cuts like a knife and only one or two rounds are needed to kill the largest rattlesnake.

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ADVERTISEMENT.

—o—

As related in the editoral columns of this issue, a new deal concerning the management of THE NATURALIST has been effected, in which Messrs. E. Butts, E T. Keim, Sid. J. Hare, David H. Todd and R. B. Trouslot, have obligated themselves for an amount sufficient to secure first-class workmanship as well as the prompt and continuous appearance of THE NATURALIST till the completion of Volume V, twelve issues, 500 8-page copies at each issue, beginning with December, 1890. Additional expense, however, will of a necessity be incurred, from the fact that the guaranteed fund does not provide for the series of fine cuts required by many of the special articles already in preparation for THE NATURALIST, nor the extra quality of paper and ink necessitated by a better grade of illustrations. Again, 500 additional copies are needed, if the Public Libraries, Scientific Associations, Academies of Science and regular Exchanges are supplied with free copies in the future as they have been in the past. These four items (cuts, paper, ink and extra copies) can only be had at an additional expense of about $250, which at present is more than we care to advance.

The Committee, believing that this expense can be met by advertisements and subscriptions, has undertaken to raise the amount in that manner and takes this method of soliciting a share of your advertising patronage.

Sufficient advertising has already been secured to warrant a GUARANTEE OF THE EXTRA COPIES, or 1,000 copies per month, regularly, for one year. The importance of several articles will demand at least three extra editions. Regular advertisers will receive the benefits of these extra editions without charge.

Advertisers will please bear in mind that the readers of THE NATURALIST are not confined exclusively to its subscribers; being, as already stated, on file with a large majority of the Public Libraries, Free Reading Rooms, Scientific Societies and Academies of Science throughout this country and Europe, it receives attention from hundreds whose names do not appear in our subscription books.

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"You can always 'bank' on the returns of standing advertisements."

Accordingly we have arranged our rates with a special reference to securing your contract for one year.

Again, the principal expense being met by the guaranteed fund and alowing for a reasonable number of subscriptions, we are able to quote very low advertising rates, but not posing as an advertising sheet, so soon as yearly contracts to the amount of $100 have been received, the rates as published below will be DOUBLED.

	One Month.	Six Months.	One Year.
½ Inch	75c.	$2.50	$4.00
1 "	$1.25	3.50	5.00

☞ Additional space quoted on application.

No Ad. taken for less than half-inch rates. Yearly contracts for half-inch and inch space must be paid six months in advance. Yearly contracts for all additional space payable quarterly in advance.

Responsible parties having contracts for large space, can make other arrangements if desirable. The right is reserved to reject any objectionable advertisement.

Drafts, Express Orders and P. O. Money Orders should be made payable to and all communications pertaining to advertising in THE NATURALIST addressed to

E. T. KEIM, Box 69,
Kansas City, Mo.

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